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July 17, 1979 Volume 984 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) : Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of October 3, 1978.

DONALD W. BANNER,
Nov. 7, 1978. *Commissioner of Patents and Trademarks.*

Patent Suits

Notices under 35 U.S.C. 290 : Patent Act of 1952

3,535,844, Emanuel M. Glaros, STRUCTURAL PANELS, **filed** May 3, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c1803, *Emanuel M. Glaros* v. *H. H. Robertson Co. et al.*

3,546,396, American Telecommunication Corporation, ENCLOSED TELEPHONE HAVING A RACEWAY FOR ITS CORD; **D. 210,378,** same, TELEPHONE HANDSET; **D. 210,379,** same, FRENCH CRADLE TELEPHONE; **D. 211,645,** same, COMBINED TELEPHONE AND ENCLOSURE THEREFOR, **filed** Sept. 14, 1972, D.C. Conn. (Bridgeport), Doc. B–594, *United States Telephone Company* v. *American Telecommunications Corp.* Judgment entered for plaintiff on Apr. 11, 1979.

3,771,829, Truckweld Equipment Company, DUMP TRAILER, **filed** Jan. 19, 1979, D.C., W.D. Wash. (Seattle), Doc. C79–100M, *Reliance Truck & Equipment, Ltd.* v. *Truckweld Equipment Company.*

3,780,246, The Black & Decker Manufacturing Company, HAND-OPERATED TOOL WITH SWITCH ACTUATOR HAVING THREE-POSITION LOCK-OFF ASSEMBLY, **filed** Aug. 11, 1976, D.C. Del. (Wilmington), Doc. 76–263, *Black & Decker Manufacturing Company* v. *Disston, Inc.* Stipulation and order dismissing case with prejudice filed on Aug. 30, 1979.

3,786,734, Martin Long, UNDERWATER ELECTRONIC FLASH ACTUATOR, **filed** Apr. 10, 1979, D.C., N.D. Calif. (San Francisco), Doc. C79–0824–LHB, *Martin Long* v. *O. H. Brigham.*

3,807,069, Robert Daley, INDEXING DEVICE, **filed** May 16, 1979, Court of Appeals, 1st Circuit, Mass. (Boston), Doc. 79–1195, *Robert Daley et al.* v. *Grafton Printing Co. Inc.*

3,829,933, William R. Lambert, METHOD AND APPARATUS FOR EVISCERATING SCALLOPS, **filed** May 11, 1979, D.C., M.D. Fla. (Orlando), Doc. 79–239–ORL–CR, *William R. Lambert, doing business as Southern Seafood Company* v. *Canaveral Seafood, Inc. et al.*

3,834,068, John W. Casey, PIPE PUSHING APPARATUS, **filed** Apr. 24, 1979, D.C., W.D. Mich. (Grand Rapids), Doc. G79–255–CA1, *John W. Casey* v. *Utility Contracting Company.*

3,841,413, William M. Applewhite, TRACTOR ATTACHMENT BAR ASSEMBLY WITH RETRACTABLE PORTIONS, **filed** Apr. 20, 1979, D.C., N.D. Miss. (Clarksdale), Doc. DC79–49–S–P, *William M. Applewhite* v. *Forrest City Machine Works, Inc.*

3,843,051, Structural Rubber Products Co., HIGHWAY RAILWAY CROSSINGS ; **4,117,977,** same, **filed** Mar. 27, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c1223, *Structural Rubber Products Co.* v. *Park Rubber Co. et al.*

3,844,523, Martin J. Wilhelm, MOLD HAVING A BREATHABLE RELEASE SHEET ACROSS THE TOP, **filed** June 23, 1975, D.C., E.D. Wis. (Milwaukee), Doc. 75–351, *Unisource Corporation* v. *Adrosil Corporation.* Patent No. 3,844,523 granted on Oct. 29, 1974 in the name of Martin J. Wilhelm is declared to be invalid. Entered May 11, 1979.

3,849,833, William Doyle Watt, Jr., COMPOSITE DRAWER HANDLE, **filed** Feb. 13, 1978, D.C., M.D.N.C. (Greensboro), Doc. C–78–59–WS, *Keeler Corporation, doing business as Keeler Brass Co.* v. *Stewart-Warner Corp.* Stipulation of dismissal of action without prejudice filed on Mar. 29, 1979.

3,850,087, John A. Landblom et al, CREPE GRIDDLE FOR MAKING THIN UNIFORM CREPES, **filed** Mar. 21, 1978, D.C. Colo. (Denver), Doc. 78–W–291, *Creative Cookware, Inc.* v. *General Electric Company.* Stipulation dismissing action, complaint and counterclaim with prejudice filed on Mar. 12, 1979.

3,852,830, Leonard Marmor, KNEE PROSTHESIS, **filed** May 25, 1976, D.C., W.D. Tenn. (Memphis), Doc. C–76–238, *Harry T. Treace et al.* v. *Leonard Marmor,* Plaintiffs ordered to remit to defendant 5% of net sales of knee prostheses sold since Oct. 1, 1974, and covered by Patent No. 3,852,830, plus accrued interest. Judgment dated Apr. 24, 1979.

3,857,566, Jerome H. Lemelson, ADHESIVE SURFACE DART AND SHOCK ABSORBING TARGET ; **3,917,271,** same, BALL FOR TARGET GAMES, **filed** Nov. 24, 1976, D.C., N.D. Ill. (Chicago), Doc. 76c4371, *Centsable Prod., et al.* v. *Jerome H. Lemelson et al.* Cause dismissed with leave to reinstate should settlement negotiations not be consummated. Order dated Apr. 27, 1979.

3,867,806, Lantech, Inc., PROCESS OF MAKING A STRETCHED-WRAPPED PACKAGE, **filed** Apr. 17, 1979, D.C., S.D. Fla. (Miami), Doc. 79–1841–C–JE, *Lantech Inc.* v. *International Packaging Machines Inc.*

3,868,670, Joseph O'Nory, CUSTOMER SERVICE DISPLAY ; **Reg. No. 1,073,493** (TELL-O-MATIC AND DESIGN), Joseph O'Nory, doing business as Advance Electro Systems, **filed** Apr. 24, 1979, D.C., C.D. Calif. (Los Angeles), Doc. 79–1489–MRP (Sx), *Joseph O'Nory* v. *Patricia Properties, Ltd.*

3,908,704, Penntube Plastics Co., CORRUGATED TUBING, **filed** Oct. 16, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c3442, *Penntube Plastics Co. et al.* v. *Union Carbide Corporation.* Cause dismissed with leave to reinstate. Nov. 29, 1978.

3,917,271. (See 3,857,566.)

3,939,545, Assembly Machines, Inc., ASSEMBLY MACHINE ACTUATOR, **filed** Apr. 9, 1979, D.C. Pa. (Erie), Doc. 79–48 Erie, *Assembly Machines, Inc.* v. *Swanson-Erie Corp.*

3,948,294, Ameron, Inc., IMPACT-PROTECTIVE COATING FOR PLASTIC PIPE, **filed** Feb. 21, 1978, D.C.N.J. (Newark), Doc. 78–329, *The Thompson Tool Co., Inc.* v. *Colonial Tool Company, Inc. et al.* Dismissal of action filed May 17, 1979.

3,964,373, Christen, Inc., PAPER LOG ROLLER, **filed** Mar. 2, 1978, D.C., E.D. Wis. (Milwaukee), Doc. 78–128, *Christen, Inc.* v. *Amron Corporation.* Consent judgment filed Mar. 13, 1979.

3,968,256, Edmond L. Sing, PREPARATION OF COTTAGE CHEESE, **filed** Apr. 4, 1977, D.C., E.D. Mo. (St. Louis), Doc. 77–360C(4), *Edmond L. Sing* v. *Culture Products, Inc.* Defendants are enjoined from infringing plaintiff's patent. May 15, 1979.

3,973,513, Maurice K. Huwe, DROP MARKER, **filed** Mar. 14, 1979, D.C., E.D. Wash. (Spokane), Doc. C–79–69, *Tru Marks, Inc.* v. *E-Z Way, Inc. and Maurice K. Huwe.* Notice of dismissal filed Apr. 25, 1979.

3,983,960, Bert J. Sikli, SCISSORS LIFT ; **4,113,065,** same, **filed** Mar. 30, 1979, D.C., N.D. Calif. (San Francisco), Doc. C–79–0703–CFP, *Mark Industries* v. *Up-Right, Inc.*

4,027,315, Dunn Instruments, Inc., MULTIPLE IMAGE CAMERA, **filed** Nov. 16, 1978, D.C., N.D. Calif. (San Francisco), Doc. C–78–2670–CBR, *Dunn Instruments, Inc.* v. *Ohio Nuclear, Inc.* Action dismissed without prejudice to the right, upon good cause shown, to reopen the action if settlement is not consummated. Filed Apr. 18, 1979.

4,030,895, Robert A. Caughey, APPARATUS FOR PRODUCING COMBUSTIBLE GASES FROM CARBONACEOUS MATERIALS, **filed** Apr. 20, 1979, D.C., W.D. Tenn. (Memphis), Doc. 79–2295–M, *Forest Fuels* v. *Vernon Plass and Scotch Kilns of Tenn.*

4,036,205, Hayes-Te Equipment Corporation, FIREPLACE STOVE, **filed** Mar. 10, 1978, D.C. Conn. (Hartford), Doc. H–78–126, *C & D Distributors, Inc.* v. *Hayes-Te Equipment Corporation et al.* Stipulation for dismissal filed Apr. 12, 1979.

4,044,521, Larry J. Fischer et al., ROOF INSULATION SUPPORT SYSTEM, **filed** Apr. 25, 1979, D.C. Minn. (Minneapolis), Doc. 4–79–173, *Larry J. Fischer* v. *Johns-Manville Corporation.*

4,050,381, Robert W. Heinemann, LOW DENSITY INDIRECT FIRE MUNITION SYSTEM (U), **filed** May 15, 1979, U.S. Court of Claims (D.C.), Doc. 202–79–C, *Robert D. Heinemann* v. *The United States.*

4,070,710, NuGraphics Inc., RASTER SCAN DISPLAY APPARATUS FOR DYNAMICALLY VIEWING IMAGE ELEMENTS STORED IN A RANDOM ACCESS MEMORY ARRAY, **filed** May 15, 1979, D.C., N.D. Calif. (San Francisco), Doc. C–79–1155–SW, *Hewlett-Packard Co.* v. *NuGraphics Inc.*

4,080,950, Jo Paul Industries, Inc., BALL THROWING DEVICE, **filed** May 17, 1979, D.C. Ind. (Terre Haute), Doc. TH–79–83–C, *Jo Paul Industries, Inc.* v. *Ken's Tool and Design, Inc. et al.*

4,087,945, Peter Berntsen and Phillip R. Peterson, DRIVEN-TYPE SURVEY MONUMENT, **filed** May 11, 1979, D.C. Ariz. (Phoenix), Doc. C–79–350, *Berntsen Cast Products, Inc.* v. *Allied Manufacturing Co., Inc.*

4,103,167, Sidney Ellner, ULTRAVIOLET LIQUID PURIFICATION SYSTEM, **filed** Apr. 10, 1979, D.C., C.D. Calif. (Los Angeles), Doc. 79–1327, *Aquafine Corporation* v. *Sidney Ellner and Ultraviolet Purification Systems, Inc.*

4,107,292, Akzona Incorporated, STABLE WATER DISPERSIONS OF ENCAPSULATED PARATHION, **filed** Mar. 26, 1979, D.C. Del. (Wilmington), Doc. 79–157, *Pennwalt Corporation* v. *Akzona Incorporated et al.*

4,113,065. (See 3,983,960.)

4,117,977. (See 3,843,051.)

4,127,975, Thomas E. Judkins, CONCEALED FASTENERS FOR WALL PANELS, **filed** May 1, 1979, D.C., N.D.N.Y. (Utica), Doc. 79–CV–294, *Thomas E. Judkins* v. *Roger Neil Weinar et al.*

D. 210,378. (See 3,546,396.)

D. 210,379. (See 3,546,396.)

D. 211,645. (See 3,546,396.)

D. 230,853, Formica Corporation, SLIDING DOOR UNIT FOR SHOWER STALLS OR THE LIKE, **filed** Apr. 20, 1979, D.C., S.D. Ohio (Cincinnati), Doc. C–1–79–251, *Powers Flat Corporation* v. *Basco Co. et al.*

D. 248,893, Trend Line Furniture Corporation, SOFA, **filed** May 1, 1979, D.C., W.D.N.C. (Statesville), Doc. ST–C–79–15, *Trend Line Furniture Corporation* v. *Stylecraft Furniture, Inc.*

D. 249,890, Roger A. Chinn et al., WOOD BURNING STOVE WITH SCREEN, **filed** Apr. 3, 1979, D.C. Oreg. (Portland), Doc. C–79–321, *Woodcutters Manufacturing, Inc.* v. *John E. Blaser et al.*

D. 250,618, Galaxy Office Furniture Limited, EXECUTIVE CHAIR, **filed** Apr. 30, 1979, D.C., C.D. Calif. (Los Angeles), Doc. 79–1566–R, *Galaxy Office Furniture Limited* v. *Chair-World, Inc. et al.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,334,067, Re. S.N. 035,255, Filed May 2, 1979, Cl. 528/17, METHOD OF MAKING ONE COMPONENT ROOM TEMPERATURE CURING SILOXANE RUBBERS, Donald R. Weyenberg, Owner of Record: *Dow Corning Corporation, Midland, Mich.,* Attorney or Agent: William E. Dominick, et al., Ex. Gp.: 144

4,020,649, Re. S.N. 034,903, Filed May 1, 1979, Cl. 63/32, BRILLIANTIZED STEP CUT DIAMOND, Henry Grossbard, Owner of Record: *The Radiant Cut Diamond Corp., New York, N.Y.,* Attorney or Agent: Camil P. Spiecens, et al., Ex. Gp.: 333

4,020,987, Re. S.N. 002,325, Filed Jan. 10, 1979, Cl. 228/56, SOLDER PREFORM, Norman Hascoe, Owner of Record: *Semi-Alloys, Inc., Mount Vernon, N.Y.,* Attorney or Agent: Laurence B. Dodds, Ex. Gp.: 321

4,025,838, Re. S.N. 033,482, Filed Apr. 26, 1979, Cl. 318/568, SIGNAL MODIFICATION DEVICE FOR MEMORY CONTROLLED MANIPULATOR APPARATUS, Takehiko Watanabe, Owner of Record: *Kawasaki Heavy Industries, Ltd., Kobe-Shi, Hyogo-Ken, Japan,* Attorney or Agent: Richard D. Mason, et al., Ex. Gp.: 217

4,065,549, Re. S.N. 037,665, Filed May 10, 1979, Cl. 423/447.4, PROCESS FOR PRODUCING A HIGH TENSILE STRENGTH, HIGH YOUNG'S MODULUS CARBON FIBER HAVING EXCELLENT INTERNAL STRUCTURE HOMOGENEITY, Yoshiro Kinoshita, Owner of Record: *Toray Industries, Inc., Tokyo, Japan,* Attorney or Agent: Austin R. Miller, et al., Ex. Gp.: 113

4,067,224, Re. S.N. 035,572, Filed May 3, 1979, Cl. 72/416, SWAGING DIES, Cedric Gwilliam Birks, Owner of Record: *C.C.L. Systems Limited, Surrey, England,* Attorney or Agent: Cedric G. Birks, Ex. Gp.: 321

4,122,814, Re. S.N. 016,369, Filed Mar. 1, 1979, Cl. 123/148 E, OPTO-ELECTRONIC IGNITION SYSTEMS FOR INTERNAL COMBUSTION ENGINES, Eric Harold Ford, Owner of Record: *Lumenition Limited, London, England,* Attorney or Agent: Roberts B. Larson, et al., Ex. Gp.: 342

4,128,732, Re. S.N. 33,992, Filed Apr. 27, 1979, Cl. 136/89 PC, SOLAR CELL, Roy Kaplow, et al., Owner of Record: *Massachusetts Institute of Technology, Cambridge, Mass.,* Attorney or Agent: Roy C. Hopgood, et al., Ex. Gp.: 114

PATENT NOTICES

Certificates of Correction for the Week of July 17, 1979

Re. 29,672	4,110,952	4,135,409	4,147,254
D. 249,118	4,111,507	4,136,160	4,147,266
3,944,610	4,111,580	4,136,251	4,147,799
3,947,890	4,111,911	4,136,505	4,148,111
3,954,009	4,112,258	4,136,563	4,148,163
3,957,761	4,112,264	4,137,257	4,148,360
4,016,295	4,112,274	4,137,500	4,148,372
4,017,696	4,112,376	4,137,537	4,148,507
4,021,345	4,112,500	4,137,948	4,148,544
4,030,821	4,114,607	4,138,065	4,148,610
4,055,392	4,116,376	4,138,452	4,148,638
4,058,512	4,116,551	4,139,526	4,148,986
4,059,583	4,116,623	4,140,599	4,149,158
4,062,625	4,116,868	4,141,080	4,149,212
4,064,334	4,116,944	4,141,239	4,149,253
4,066,772	4,118,711	4,141,701	4,149,266
4,088,704	4,121,295	4,141,734	4,150,210
4,090,230	4,121,763	4,142,495	4,150,352
4,090,783	4,122,468	4,142,808	4,150,357
4,091,841	4,122,506	4,143,108	4,150,475
4,092,706	4,122,554	4,143,119	4,150,603
4,093,131	4,122,744	4,143,143	4,150,642
4,094,875	4,123,335	4,143,278	4,151,014
4,095,374	4,123,664	4,143,313	4,151,110
4,097,071	4,123,957	4,143,393	4,151,189
4,097,935	4,124,932	4,143,572	4,151,259
4,098,346	4,125,302	4,143,737	4,151,364
4,099,240	4,125,499	4,144,212	4,151,606
4,099,242	4,125,507	4,144,289	4,151,697
4,099,832	4,125,651	4,144,787	4,151,825
4,102,186	4,126,422	4,144,924	4,151,877
4,104,769	4,126,677	4,144,960	4,151,904
4,105,882	4,128,684	4,145,351	4,152,276
4,106,167	4,128,712	4,145,575	4,152,360
4,107,322	4,129,937	4,145,969	4,152,396
4,107,612	4,131,003	4,146,080	4,152,472
4,108,562	4,131,614	4,146,291	4,152,473
4,108,715	4,131,648	4,146,534	4,153,377
4,108,989	4,131,649	4,146,584	4,153,443
4,109,513	4,133,868	4,146,667	4,153,732
4,109,595	4,133,966	4,146,833	
4,110,038	4,134,421	4,147,035	
4,110,679	4,134,978	4,147,116	

Disclaimers

3,784,635.—*Robert J. Theissen,* Westfield, N.J. SUBSTITUTED PHENOXYBENZOIC ACID AND ESTERS THEREOF. Patent dated Jan. 8, 1974. Disclaimer filed Feb. 9, 1979, by the assignee, *Mobil Oil Corporation.*

The term of this patent subsequent to Mar. 28, 1989, has been disclaimed.

3,934,059.—*Murray Arthur Polinsky,* Somerville, N.J. METHOD OF VAPOR DEPOSITION. Patent dated Jan. 20, 1976. Disclaimer filed Mar. 29, 1979, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

3,983,168.—*Robert J. Theissen,* Westfield, N.J. HALOPHENOXY BENZOIC ACID SALTS. Patent dated Sept. 28, 1976. Disclaimer filed Feb. 9, 1979, by the assignee, *Mobil Oil Corporation.*

The term of this patent subsequent to Mar. 28, 1989, has been disclaimed.

4,002,662.—*Robert J. Thiessen,* Westfield, N.J. 2-NITRO-5-(CYANO-TRIFLUOROMETHYL-PHENOXY) BENZOIC ACIDS AND ESTERS. Patent dated Jan. 11, 1977. Disclaimer filed Feb. 9, 1979, by the assignee, *Mobil Oil Corporation.*

The term of this patent subsequent to Mar. 28, 1989, has been disclaimed.

4,026,601.—*John L. Dill, III,* Mansfield, and *Othar P. Kennedy, Jr.,* Mount Vernon, Ohio. AIR SUSPENSION SEAT ASSEMBLY. Patent dated May 31, 1977. Disclaimer filed May 11, 1979, by the assignee, *National Seating Company.*

Hereby enters this disclaimer to claims 1, 2, 12 and 13 of said patent.

4,042,421.—*Jaak Stefaan Van Den Sype,* Mount Kisco, *William Alphonse Kilinskas,* Cortlandt, N.Y. *Richard Benedict Mazzarella,* Indianapolis, Ind., and *John Bernard Lightstone,* White Plains, N.Y. METHOD FOR PROVIDING STRONG TOUGH METAL ALLOYS. Patent dated Aug. 16, 1977. Disclaimer filed May 29, 1979, by the assignee, *Union Carbide Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6, 11, 12, 13 and 14 of said patent.

4,097,791.—*Ward L. Bivens,* Painesville, and *Richard A. Schwehr,* Mentor, Ohio. DELAYED TURN-ON AND TURN-OFF CONTROL CIRCUIT. Patent dated June 27, 1978. Disclaimer filed May 3, 1979, by the assignee, *Towmotor Corporation.*

Hereby enters this disclaimer to all claims of said patent.

4,128,737.—*Mark V. Dorais,* Detroit, Mich. VOICE SYNTHESIZER. Patent dated Dec. 5, 1978. Disclaimer filed May 29, 1979, by the assignee, *Federal Screw Works.*

Hereby enters this disclaimer to claims 11–16 and 21–23, of said patent.

Patents Available for Licensing or Sale

3,314,080. HUMIDIFYING SYSTEM. John Shilling, Jr., 16126 Spinning Ave., Torrance, Calif. 90504.

3,858,612. FLOOR DRAIN STOPPER. Arthur Van Steenburg, RR. Box 9484, Spirit Lake, Iowa 51360.

3,991,700. RUBBER ATTACHMENT FOR OUTBOARD MOTORS. William T. Cleary, 209 Fisher St. and Paul A. Bourgeois, 130 W. Baraga Ave., Marquette, Mich. 49855.

4,021,872. MATERNITY MATTRESS. Lee Powell, 4534 White Pine, Memphis, Tenn. 38109.

4,099,267. APPARATUS FOR MIXING GRANULAR FERTILIZER AND/OR LAWN TREATMENT LIQUID IN WATER. William J. Flynn, 915 Middle River Drive, Fort Lauderdale, Fla. 23304.

4,108,409. GOLF BAG ACCESSORY. Joseph X. Rombach. Correspondence to: Louis H. Rombach, 201 North Pembrey Drive, Wilmington, Del. 19803.

4,143,761. SAFETY MATCH BOOK. Francis P. Brand, 11 Curley St., Long Beach, N.Y. 11561.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 21, 1979

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-11-78
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines: Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-2-78
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, Treating Processes, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	7-6-78
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-20-78
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-1-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	11-2-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear and Reactors; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptograph; Laser Devices; Radioactive Materials; Power Metallurgy, Rocket Fuels.	2-3-78
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-1-78
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	8-25-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-17-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-22-78
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-11-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-7-78
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-30-78
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Textiles; Apparel and Shoes; Sewing Machines; Machine Elements; Clutches.	12-20-77

Expiration of patents: The patents within the range of numbers indicated below expire during April 1979, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,027,558 to 3,031,668, inclusive
Plant Patents..... Numbers 2,135 to 2,142, inclusive

REISSUES

JULY 17, 1979

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,043

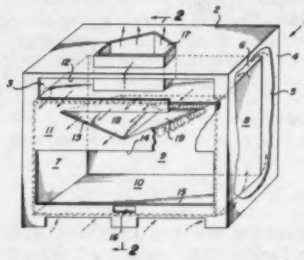
VORTICAL FLOW AEROTHERMODYNAMIC FIREPLACE UNIT

Alexander J. Moncrieff-Yeates, 8924 Rhyme Ct., Annandale, Va. 22003

Original No. 4,056,091, dated Nov. 1, 1977, Ser. No. 570,798, Apr. 23, 1975. Application for reissue Jun. 8, 1978, Ser. No. 913,849

Int. Cl.[2] F24B *7/00*

U.S. Cl. 126—121 **21 Claims**



1. A heat exchange structure for use [in a fireplace] *with a firebox* of the type including an enclosure for a fire producing a hot thermally donative gas, said enclosure comprising side walls, a back wall, and a top wall,

a flue opening in said top wall for exhausting said donative gas,

an outer enclosure comprising walls spaced outwardly from said fire enclosure walls and defining therebetween passages for a thermally recipient air,

a front wall extending downwardly from a front portion of said top wall and including a fire enclosure opening therein,

means communicating air from said thermally recipient air passages through said front wall, said means comprising a duct extending between junctures with said back and front walls through a central portion of said fire enclosure,

said structure further characterized in that

said duct has a bottom surface comprising a flame plate for exposure to said donative gas in said enclosure, said flame plate being slanted upwardly toward one of said junctures to define throughout the extent of said one juncture a laterally extensive thermally donative air vorticity area throughout which the donative air is induced to whirl in a stable vortex proximate to and in heat exchange relationship to said flame plate and said wall structure.

Re. 30,044

VERTICAL ARCH SHELTER

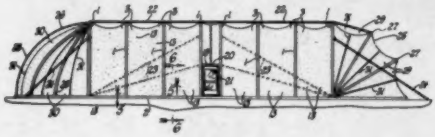
Carl F. Huddle, Pleasant Ridge, Mich., assignor to Tension Structures Company, Pleasant Ridge, Mich.

Original No. 4,036,244, dated Jul. 19, 1977, Ser. No. 576,101, Jun. 12, 1975. Continuation-in-part of Ser. No. 339,333, May 8, 1973, abandoned, which is a continuation-in-part of Ser. No. 93,293, Nov. 27, 1970, abandoned. Application for reissue May 22, 1978, Ser. No. 908,518

Int. Cl.[2] A45F *1/16;* E04B *1/32*

U.S. Cl. 135—4 R **15 Claims**

1. A vaulted membrane shelter comprising at least two substantially vertical arches with curved bights mounted on a base face to face but spaced apart with means to fix said arches in space to form a vaulted framework; a tensioned flexible membrane extending between and being operatively attached to said arches by means that permits membrane tensioning movement downward along arch circumference; said membrane [being fabricated to form] *having* an inward concave curvature between the bights of said arches, [having a maximum depression of] *with a curvature depth at its lowest point*



that is at least 5% of the distance between said arches, producing double curvature in said membrane *between said bights;* and means for maintaining tension in said membrane acting between the lower portion of said membrane and said base to diminish membrane vibration and increase rigidity of said shelter.

Re. 30,045

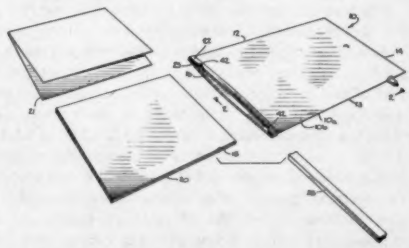
VACUUM X-RAY ENVELOPE

Franklin R. Greene, Flushing, N.Y., assignor to E-Z-EM Company, Inc., Westbury, N.Y.

Original No. 3,958,693, dated May 25, 1976, Ser. No. 542,256, Jan. 20, 1975. Continuation-in-part of Ser. No. 438,033, Jan. 30, 1974, abandoned. Application for reissue Dec. 22, 1976, Ser. No. 753,545

Int. Cl.[2] B65D *81/20;* B03B *41/18*

U.S. Cl. 206—455 **18 Claims**



1. A reuseable envelope for an X-ray cassette having X-ray film and intensifier screen comprising:

first and second collapsible sheets sealed to one another along first, second and third sealed edges forming an envelope having an open edge,

a sealing zone extending across said open edge between said first and second sealed edges,

said sheets having polished facing interior surfaces in said sealing zone,

said interior surfaces in said sealing zone being flush against each other at the line of the seal at said first and second sealed edges, the seal at said first and second sealed edges being beadless in said sealing zone, and

a valve sealed to one of said sealed edges permitting communication between the interior of said envelope and the outside, said valve being positioned away from said sealing zone.

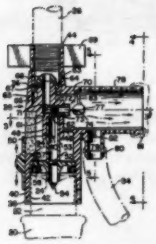
Re. 30,046
NEBULIZER

Edward van Amerongen, Wilmette, Ill., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

Original No. 3,771,721, dated Nov. 13, 1973, Ser. No. 286,692, Sep. 6, 1972. Application for reissue Feb. 26, 1975, Ser. No. 553,081

Int. Cl.[2] A61M *11/02*

U.S. Cl. 239—338 10 Claims



1. A nebulizer adapted to be screwed onto a receptacle having an upwardly facing threaded portion adapted to receive the nebulizer, the receptacle being closed at said threaded portion by a breachable membrane, *said nebulizer* comprising a body having a hollow portion and downwardly facing socket, said socket being threaded whereby the nebulizer may be screwed onto the threaded portion of said receptacle, said socket having concentrically a breaching tubular means adapted for one end to breach said membrane, said body having a venturi means positioned in the hollow portion, the other end of said breaching tubular means being in fluid communication with a conduit terminating at the venturi transverse with the venturi means, a second socket means adapted to receive a connection means from a source of pressurized fluid, said second socket means being in fluid communication with the upstream portion of said venturi means, said body having a chamber means, the downstream portion of said venturi means terminating in said chamber means, said chamber means having a ball means disposed downstream of said venturi and displaced therefrom, whereby fluid emanating from said venturi impinges on said ball, said chamber means having an outlet at the bottom thereof for draining liquid, said chamber means having at the bottom an elongated axially disposed ridge, said hollow portion being at one side in fluid communication with said chamber means, and said body having an opening at substantially the other side thereof in communication with said hollow portion.

Re. 30,047
ROAD SURFACING MATERIALS

Geoffrey Lees, Stratford upon Avon, and Arthur R. Williams, Birmingham, both of England, assignors to Dunlop Limited, Great Britain

Original No. 3,957,525, dated May 18, 1976, Ser. No. 449,759, Mar. 11, 1974. Continuation of Ser. No. 245,159, Apr. 18, 1972, abandoned. Application for reissue May 2, 1978, Ser. No. 902,767

Claims priority, application United Kingdom, Apr. 24, 1971, 11237/71; Nov. 16, 1971, 53096/71

Int. Cl.[2] C08H *17/04*

U.S. Cl. 106—288 B 5 Claims

1. A road surfacing material comprising a blend of at least two aggregates of graded sizes up to not more than 1½ inches disposed in a binder matrix and having different rates of wear as judged by the aggregate test BS 812 1967,

the particles of each of said two aggregates exposed to the surface falling within different size ranges, the slower wearing aggregate comprising one portion of particles of larger size and another portion of particles of smaller size than any of the particles of the faster wearing aggregate, *and each of said two aggregates having a surface micro-texture defined by asperity heights in the range of 5 to 500 microns.*

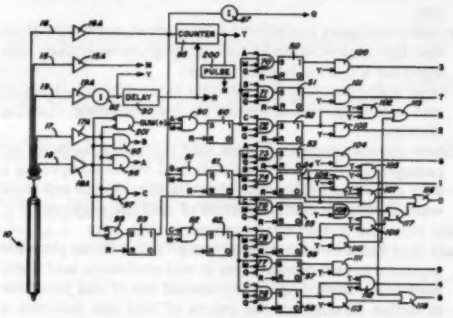
Re. 30,048
CHARACTER RECORDING SYSTEM

David Moss, Berkley, Calif., assignor to Creative Ventures, Inc., Dayton, Ohio

Original No. 3,903,502, dated Sep. 2, 1975, Ser. No. 392,782, Aug. 29, 1973. Application for reissue Jun. 22, 1977, Ser. No. 808,800

Int. Cl.[2] G06K *9/00*

U.S. Cl. 340—146.3 SY 25 Claims



22. Apparatus for translating motion of a scribe member into signals defining a complete set of characters, comprising

means defining a cell within which a character is traced,

sensing means operating to sense the beginning and the end of each scribing stroke of the scribe member,

means for generating at least one unique signal identifying the position of the scribe member during one or more scribing strokes by which a character is traced in said cell,

and logic circuit means responsive both to said signal generating means and to said sensing means and constructed to translate said signals only at the beginning and the end of a scribing stroke into a further signal identifying a unique character.

PLANT PATENTS

GRANTED JULY 17, 1979

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,437

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Jun. 29, 1978, Ser. No. 920,361

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—12 **1 Claim**

1. A new and distinct variety of rose plant of the grandiflora class, substantially as shown and described herein, characterized particularly as to novelty by the unique combination of its upright, vigorous growth with many blooms borne in long-stemmed clusters, its cherry and white bicolored flowers with no fragrance, its heavy long, abundant thorns and its dark brown new foliage.

4,438

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Mar. 31, 1978, Ser. No. 892,482

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its heavily branched plant, Chrome Yellow color of buds and blooms, good resistance to rose powdery mildew, lack of fragrance and stems with numerous, long straight prickles.

4,439

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Mar. 27, 1978, Ser. No. 890,866

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—17 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, upright habit of growth; its tendency to bloom in clusters of several blooms during Spring and early Summer; its bud and flower color of Wilson's Chinese Coral; its very light fragrance.

4,440

ROSE PLANT—ETERNA

Georges A. Delbard, Paris, France, assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Dec. 12, 1977, Ser. No. 859,995

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct cultivar of rose of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its uniform color of French Rose from bud to well-developed open flower; its vigorous plant, straight and relatively heavy stems.

PATENTS

GRANTED JUL. 17, 1979

ERRATA

For CLASS	See PATENT NO.
414–025	4,161,253
206–504	4,161,254
414–323	4,161,255
414–620	4,161,256
400–175	4,161,373
401–116	4,161,374
403–169	4,161,375
405–196	4,161,376
435–199	4,161,424
435–011	4,161,425
435–313	4,161,426
525–004	4,161,472
585–004	4,161,495
585–836	4,161,496
585–714	4,161,497
525–439	4,161,498
428–213	4,161,547
428–539	4,161,551
428–654	4,161,553
526–090	4,161,571
525–444	4,161,579
525–411	4,161,581

PATENTS

GRANTED JULY 17, 1979

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PATENTS

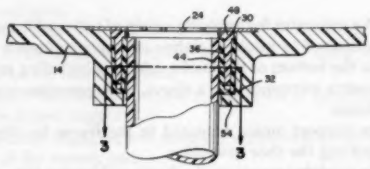
GRANTED JULY 17, 1979

GENERAL AND MECHANICAL

4,161,042
ADJUSTABLE PROSTHETIC LIMB
Hugh V. Cottingham, Upper Montclair, and Joseph Scrocco, West Orange, both of N.J., assignors to BHN, Inc., Upper Montclair, N.J.
Filed Oct. 25, 1977, Ser. No. 845,185
Int. Cl.[2] A61F *1/08*
U.S. Cl. 3—17 R **31 Claims**

1. A prosthetic appliance for supporting a person having a residual lower limb comprising a socket means including a base plate, and a plurality of struts, each of said struts being secured in said base plate in overlapping relationship with respect to each other to define a selectively adjustable sleeve for receiving and securing a residual lower limb therein, said adjustable sleeve including an ischial bearing means for supporting a person's weight so that said selectively adjustable sleeve is adapted to be diametrically varied to receive a residual lower limb and to radially apply pressure to said residual lower limb and thereby stabilize the position of said ischial bearing means with respect to said person, and an elongated support means with respect to said person, and an elongated support means adjustably secured to said socket means for selectively adjusting the length of said prosthetic appliance.

4,161,043
SEALING MECHANISM FOR A LIQUID FLOOR DRAIN
Raymond Flores, P.O. Box 226, Union City, Calif. 94587
Filed Mar. 13, 1978, Ser. No. 885,653
Int. Cl.[2] E03C *1/26*; E03F *5/06*; F16L *17/02*
U.S. Cl. 4—292 **8 Claims**



1. A sealing mechanism for a liquid floor drain having a floor opening including side portions in the vicinity of a liquid drain conduit comprising:

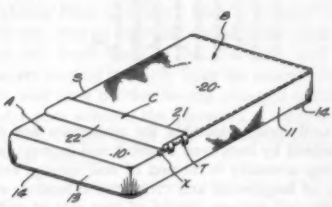
a. a connecting conduit adapted for communicating with the liquid drain conduit and extending therefrom within the floor opening to the vicinity of the surface of the floor;

b. first gasket member adapted for placement within the floor opening and for placement circumferentially with respect to said connecting conduit, said first gasket member having a first wall adjacent said connecting conduit, said first gasket member also having a second wall circumjacently positioned with respect to said connecting conduit and adjacent first wall, said first and second walls of said first gasket member each having edge portions oriented toward the floor, said first and second walls forming a cavity therebetween;

c. second gasket member being circumjacently placed with respect to said first gasket member, said second gasket member including wedging means for forcing said first wall of said first gasket member against the side portions of said drain opening, and for forcing said second wall of said first gasket member against said connecting conduit, said second gasket member effecting sealing between said connecting conduit and the side portions of said drain opening; and

d. means for overlapping said edge portions of said first and second walls and for sealing said cavity formed therebetween.

4,161,044
COVER SECURE CONTOUR BED SHEETS
Gladys D. Bogle, 1650 Loganrita Ave., Arcadia, Calif. 91006
Filed Apr. 5, 1978, Ser. No. 893,767
Int. Cl.[2] A47G *9/00*
U.S. Cl. 5—494 **8 Claims**



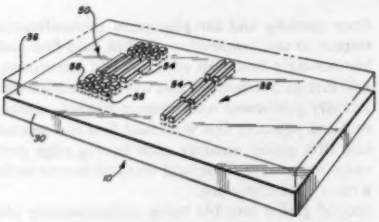
1. Bedding for ensuring the covered confinement of a sleeping person, and including in combination; a contoured bottom sheet comprised of a panel to coextensively overlie a mattress and having depending panels form-fitted to embrace said mattress, and a top sheet to substantially overlie the bottom sheet and permanently secured to the bottom sheet along one side thereof and releasably secured to the foot and other side thereof and having a flap turned back from its head portion and fitted to and retaining loose bed coverings.

4,161,045
MATTRESS
John J. Regan, 2316 N. Harlem Ave., Elmwood Park, Ill. 60635
Filed Dec. 19, 1977, Ser. No. 861,961
Int. Cl.[2] A47C *23/00, 27/00*
U.S. Cl. 5—464 **23 Claims**

1. In a mattress comprising a single layer of a resilient material and having a generally planar body-supporting top surface and a generally planar support-engaging bottom surface, the improvement which comprises:

first and second pluralities of individual ribs of less compressibility than the material of said mattress extending transversely through said mattress, the ribs of each plurality being spaced apart laterally of each other in the longitudinal direction of the mattress whereby each said individual rib is independently compressible, said first and second pluralities being spaced apart longitudinally of the

mattress and positioned to support only the shoulders and buttocks of one lying on the mattress, the lesser resilience of the ribs complementing the greater resilience of the mattress material to support the body lying on the mattress in a generally straight attitude.

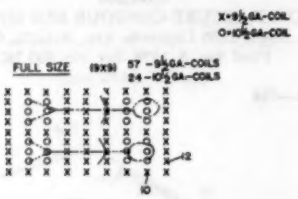


4,161,046

COIL SPRING ASSEMBLY

Gerald A. Golembeck, Lake Elmo, Minn., assignor to The United States Bedding Company, St. Paul, Minn.

Filed May 10, 1978, Ser. No. 904,396
Int. Cl.[2] A47C *23/04*
U.S. Cl. 5—248 **1 Claim**



1. A coil spring assembly for mattresses and box springs characterized by improved comfort and support in which the coil spring assembly is formed of coil springs arranged in a plurality of lengthwise and crosswise extending rows and in which the coil springs consist of two sets of coil springs in which the coil springs of both sets are of the same size but in which the coil springs of one set are of lower gauge and greater stiffness than the coil springs of the other set with the outermost coil springs in each of the lengthwise and crosswise extending rows and in the middle rows extending lengthwise and crosswise of the spring assembly being of the one set while the coil springs remaining in the rows adjacent the outermost lengthwise rows being of the other set with the number of lengthwise rows of coil springs of the one set comprising at least half of the lengthwise rows of coil springs in the spring assembly.

4,161,047

PROCESS FOR RECOVERY OF HYDROCARBONS

Edwin A. Riley, 901 Ridgeway Ter., Arlington, Tex. 76012

Filed Oct. 19, 1977, Ser. No. 843,567
Int. Cl.[2] E21B *43/16, 43/18*
U.S. Cl. 166—266 **12 Claims**

10. A process for the recovery of hydrocarbons from a partially depleted oil formation reservoir that has been subjected to at least primary recovery operations and which reservoir is unsuited for other secondary recovery processes due to adverse properties of the formation, comprising the steps of:

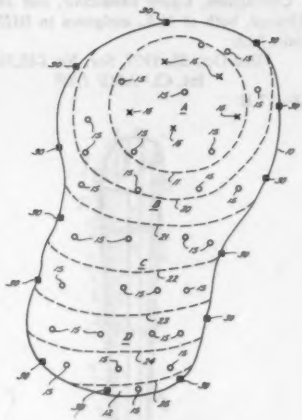
injecting dry natural gas into one well of an oil-bearing reservoir having a plurality of wells previously drilled therein, wherein the production of oil from said wells was theretofore discontinued;

continuing said injecting until the bottom-hole pressure of an adjacent well is increased sufficiently to enable production of oil therefrom to be effected by enriching said gas by vaporization of the light ends of the oil in the reservoir;

producing oil and some enriched gas from the adjacent well in the formation;

separating oil and other hydrocarbon liquids from the natural gas to provide a stripped natural gas which is essentially entirely methane; and

recycling the stripped dry natural gas back into the formation a plurality of times to repeat the foregoing steps for maximum recovery of the oil from the reservoir while storing the natural gas for subsequent use.

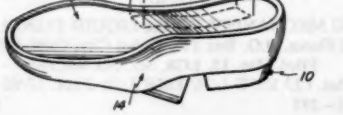


4,161,048

METHOD AND APPARATUS FOR STIFFENING SHOE INSOLES

Leo F. Stanton, Newburyport, Mass., assignor to Bush Universal, Inc., Woburn, Mass.

Filed Oct. 3, 1977, Ser. No. 838,670
Int. Cl.[2] A43D *21/00, 31/00, 3/00*
U.S. Cl. 12—146 S **25 Claims**



1. An apparatus for applying a strip of activatable material to the bottom of an insole of a shoe assembly to form a shank in situ on the bottom of the insole, said strip including an activatable matrix surrounded by a sleeve, said apparatus comprising:

a frame;

shoe support means mounted to the frame for firmly supporting the shoe assembly;

strip retaining means on the frame and having strip engaging portions spaced from the shoe support means;

positioning means for locating a strip in a predetermined position between and in alignment with the strip retaining means and shoe support means;

said shoe support means being mounted for movement toward and away from the strip retaining means between a first, remote position and a second, operative position in

which the insole may be urged against the strip engaging portions of the strip engaging means;

said shoe support and strip retaining means being constructed and arranged so that as the shoe support means moves from its first to its second position, the insole of a supported shoe assembly will engage the positioned strip and continued movement of the shoe support means will carry and urge the strip and insole bottom against the strip engaging portions of the strip retaining means to hold the strip against the insole; and

means for activating the matrix while the strip is held against the insole bottom.

21. A method for forming and applying a shank stiffener to the bottom of a shoe insole, said stiffener initially being in the form of an elongate flexible sleeve containing a flexible matrix of externally activatable thermosetting resin, said method comprising:

supporting a shoe assembly in a predetermined position, the shoe assembly having a last and an insole at its bottom;

aligning a strip engaging means with the insole bottom but in spaced relation thereto;

locating said stiffener between the strip engaging means and the insole of the supported shoe assembly, in alignment with but in spaced relation to the insole and strip retaining means;

thereafter effecting relative movement of the shoe assembly and the strip engaging means toward each other to cause the stiffener to be urged firmly toward the insole bottom by the strip engaging means; and

activating the stiffener while it is maintained in engagement with the insole bottom.

4,161,049

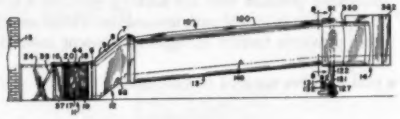
PASSENGER LOADING BRIDGE

Robert L. Saunders, Ogden, and George D. Hone, Roy, both of Utah, assignors to Abex Corporation, New York, N.Y.

Continuation of Ser. No. 847,638, Nov. 1, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,692

Int. Cl.[2] **E01D** *1/00*

U.S. Cl. 14—71.5 **21 Claims**



4. A passenger loading bridge for interconnecting an aircraft with the ground level of an airport terminal building including:

a. a rotunda connected to the building substantially at ground level;

b. a tunnel support vertically pivotally connected at its inner end to the rotunda to enable horizontal swinging movement of the tunnel support;

c. a tunnel horizontally pivotally connected at its inner end to the tunnel support;

d. an aircraft engaging cab assembly connected to the outer end of the tunnel; and

e. a drive assembly mounting the outer end of the tunnel for swinging the tunnel about the rotunda and including elevating means for elevating the tunnel and cab assembly; characterized by

f. the tunnel having a floor support extending longitudinally of the tunnel and bearing all normal structural loads and the side walls and roof being of non-structural curtain wall construction subject only to wind and roof loads.

4,161,050

HAIR BRUSH

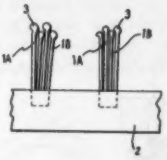
Tetsuo Sasaki, Sakura, and Yoshimi Tsuchiya, Yachiyo, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1978, Ser. No. 919,423

Claims priority, application Japan, Jul. 1, 1977, 52-87229[U]; Jan. 30, 1978, 53-9894[U]

Int. Cl.[2] **A46B** *9/02*

U.S. Cl. 15—159 A **4 Claims**



1. A hair brush comprising: a brush body; a plurality of discrete, spaced-apart, tufts of bristles whose inner ends are secured to said brush body and which project away from said brush body, said tufts being arranged on said brush body so that the total number of bristles per unit area of the brushing surface is from 8 to 30 bristles/cm^2, each tuft consisting essentially of approximately equal numbers of long bristles of substantially equal length and short bristles, said long and short bristles being substantially uniformly distributed in each tuft, each tuft containing a total of from 2 to 6 bristles, each bristle having a diameter of from 0.45 to 0.70 mm and projecting from the brush body a distance of from 15 to 30 mm, said short bristles projecting from said brush body a distance which is from 1 to 10 mm shorter than the distance said long bristles project from said brush body so that the outer ends of said short bristles are located inwardly from the outer ends of said long bristles, said long bristles having enlarged substantially spherical outer ends wherein the diameters of said outer ends are from 1.2 to 2.5 times larger than the diameters of the remainders of said bristles.

4,161,051

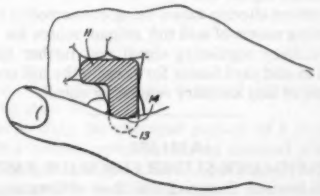
CONTOURED HANDLE

Bernard Brodwin, 5 Barone Rd., West Orange, N.J. 07052

Filed Apr. 19, 1977, Ser. No. 788,821

Int. Cl.[2] **B25G** *1/10*

U.S. Cl. 16—110 R **7 Claims**



1. A contoured handle having an elongated body having a length at least equal to the width of the palm of a human hand, said body having two protruding portions extending along the length of the body and said portions protrude in different directions from the longitudinal axis of the body, the direction of one portion is at substantially a right angle with respect to the direction of the other of said portions, one of said portions having a first recessed channel adapted to receive the thumb of a human hand, and the other of said portions having a convexly curved surface adapted to occupy the partially enclosed space by curled fingers of the same human hand.

4,161,052

METHOD AND APPARATUS FOR MAKING A UNIFORM, CONTINUOUS SLIVER

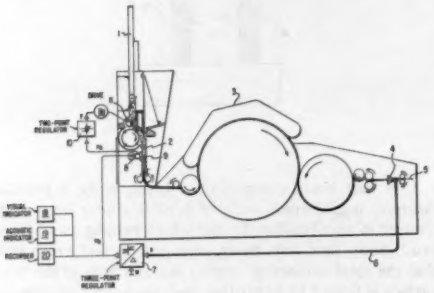
Ludwig Erben, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trutzschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Dec. 21, 1977, Ser. No. 862,690

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658044

Int. Cl.[2] D01H 5/38

U.S. Cl. 19—240 14 Claims



1. An apparatus for regulating the sliver output of a carding machine supplied with a tuft column by a card feeder having a tuft shaft and feeding means for introducing tuft into the tuft shaft; comprising in combination:

(a) a sliver sensor for continuously sensing the throughput quantity of the sliver and generating a continuous main regulating signal as a function of the throughput quantity;

(b) a regulator connected to said sliver sensor for receiving said main regulating signal from said sliver sensor and generating a reference signal as a function of said main regulating signal;

(c) a tuft column sensor connected to said tuft shaft for sensing a variable of the tuft column advancing in said tuft shaft; said tuft column sensor having

(1) signal generating means for emitting an auxiliary regulating signal as a function of the sensed variable of the tuft column;

(2) a desired value setting means being connected to said regulator for receiving said reference signal from said regulator and further being connected to said signal generating means of said tuft column sensor for varying said auxiliary regulating signal as a function of said reference signal; and

(d) tuft column altering means being connected to said signal generating means of said tuft column sensor for receiving said auxiliary regulating signal and further being connected to said card feeder for altering the tuft column as a function of said auxiliary regulating signal.

4,161,053

AUTOMATIC-LOCK SLIDER FOR SLIDE FASTENER

Wolfgang Ruhrmann, Stuttgart, Fed. Rep. of Germany, assignor to Gundel Ruhrman, Stuttgart, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,597

Claims priority, application Fed. Rep. of Germany, May 11, 1976, 2620682

Int. Cl.[2] A44B 19/30

U.S. Cl. 24—205.14 R 7 Claims

1. An automatically locking slider for a slide fastener consisting essentially of:

(a) a slider body of rigid material including a top plate, a bottom plate, and a wedge fixedly connecting said plates,

(1) said plates defining therebetween a path for passage of a slide fastener stringer through said slider body in a predetermined direction, said wedge dividing a terminal portion of said path into two branches, and at least one of said plates including flange means bounding said path transversely to said direction,

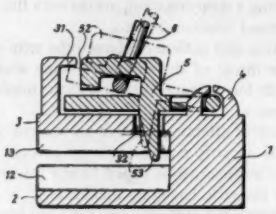
(2) said top plate being formed with an aperture communicating with said path;

(b) a latch of rigid material secured to said top plate outside said path for free pivoting movement about an axis transverse to said direction,

(1) said latch including a detent passing through said aperture and having two opposite faces transverse to said direction, a first one of said faces being directed away from said wedge, and the second face being directed toward said wedge,

(2) said faces converging inward of said path toward a free end of said detent,

(3) respective integral abutment portions of said top plate and of said latch engaging each other for limiting said pivoting movement to an unlocking position and a locking position,



(4) in said unlocking position of said latch, said first face being approximately perpendicular to said direction, and said free end projecting from said aperture into said path and toward said bottom plate,

(5) in said locking position of the latch, said free end farther projecting into said path and being nearer said bottom plate and said wedge than in said unlocking position,

(6) whereby said free end frictionally engages said stringer during movement of said stringer in said path in a direction away from said wedge without preventing such movement when said latch is in the unlocking position, the latch is pivoted by the engaged stringer from the unlocking position into the locking position when the stringer moves in said path toward the wedge and thereafter prevents further stringer movement toward said wedge; and

(c) a pull member secured to said latch.

4,161,054

METHOD FOR CONTINUOUSLY FULLING AND WORKING TEXTILE MATERIAL IN ROPE FORM

Jose M. Serracant Clermont, Calle Virgen de Gracia, 52 Sabadell, Spain

Continuation of Ser. No. 677,846, Apr. 16, 1976, abandoned. This application Nov. 30, 1977, Ser. No. 856,159

Claims priority, application Spain, Apr. 17, 1975, 436.895

Int. Cl.[2] D06C 17/00

U.S. Cl. 26—21 6 Claims

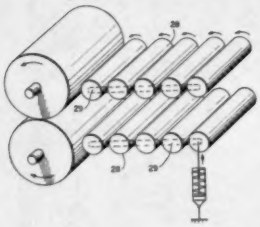
1. A method for continuously pleating, compressing and fulling textile material in rope form, said method comprising:

providing an elongated enclosure having at least two opposite walls thereof defined by movable members, with each of said movable members comprising a plurality of separate surfaces spaced from each other longitudinally of said enclosure;

continuously introducing textile material in endless rope form into a first end of said enclosure at a first speed;

driving all of said separate surfaces of each of said movable members at a second speed slower than said first speed, thereby forming said textile material into folds, and continuously and positively contacting said folds with all of said separate surfaces of each of said movable members which move in the same direction as said folds, thereby continuously guiding and carrying said folds through said enclosure at said second speed;

simultaneously urging all of said separate surfaces of at least one of said movable members toward said folds in a direction transverse to the direction of movement of said folds through said enclosure, thereby compressing said folds;



continuously discharging said folds at a uniform rate from a second end of said enclosure; and

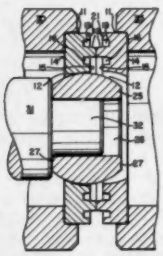
repeatedly passing said textile material through said enclosure, thereby repeatedly folding and compressing said textile material.

4,161,055

METHOD OF MAKING SELF ALIGNING SPHERICAL BEARING

Mykola Weremijenko, Yardley, Pa., assignor to Roller Bearing Company of America, West Trenton, N.J.

Filed May 17, 1978, Ser. No. 906,474
Int. Cl.[2] B21D *53/10*
U.S. Cl. 29—149.5 B **4 Claims**



1. A method of making a self aligning spherical bearing comprising the steps of

placing an outer bearing race component in a holding fixture,

placing an inner spherical bearing race in a holding fixture adjacent said outer bearing race component,

placing a second outer bearing race component in a rotatable bearing fixture in contact with said outer bearing race component,

rotating said second outer bearing race component relative to said first bearing race component while applying axial pressure thereto for fusion welding,

directing the flash weld material into a space in at least one of said outer bearing race components,

stopping rotation of said second outer bearing race component at a predetermined axial location,

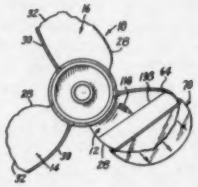
applying axial pressure on said second outer bearing race component until stop faces on said outer bearing race components are in contact and removing the completed bearing from said holding fixture.

4,161,056

METHOD AND DEVICE FOR REPAIRING DAMAGED SCREW PROPELLERS

Philip N. Dunham, Biddeford, Me., assignor to P.R.K., Inc., Orlando, Fla.

Filed Aug. 5, 1977, Ser. No. 822,250
Int. Cl.[2] B23P *7/00*
U.S. Cl. 29—402 **12 Claims**



11. A method of repairing a damaged screw propeller comprising the steps of:

(a) surrounding the damaged portion of a propeller blade with a hollow envelope having external surfaces corresponding in configuration to a portion of the blade before said portion received its damage to substantially duplicate the configuration of said portion of said blade before said portion received its damage; and

(b) securing said envelope in the position determined by said surrounding step and filling any internal voids due to blade damage between the envelope and the damaged blade with an adhesive.

4,161,057

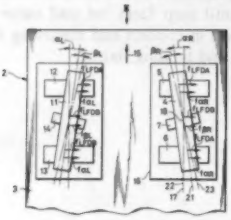
Patent Not Issued For This Number

4,161,058

METHOD FOR ATTACHING STEERING WHEEL

Shinichi Sasaki, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Feb. 16, 1978, Ser. No. 878,430
Claims priority, application Japan, Aug. 25, 1977, 52-101125
Int. Cl.[2] B23P *11/00*
U.S. Cl. 29—428 **2 Claims**



1. A method for attaching a steering wheel having a linear axis of symmetry to the steering column of a motor vehicle, said method comprising the steps of:

placing said vehicle on the stage of a toe-in tester including drive rollers so as to mount the front wheels of said vehicle on said drive rollers, said stage defining an axis thereof;

moving said drive rollers in a manner that the axes of said drive rollers are perpendicular to the axis of said stage as well as to the planes of rotation of said front wheels;

detecting thereby slide-slipping angles α_R, α_L of right and left front wheels of said vehicle relative to said drive rollers;

also detecting camber angles C_{NR}, C_{NL} of said right and left front wheels so as to determine a compensating angle y; and

attaching said steering wheel to said steering column with the axis of symmetry of said steering wheel being angularly biased through said compensating angle y relative to the forward direction of travel of said vehicle when the direction of said vehicle is stabilized on said stage of said toe-in tester;

said compensating angle y being determined by the equation

$$y=a\,(\alpha_R+\alpha_L)+(C_{NR}-C_{NL})+C$$

wherein a,b,c are constants dependent upon the type of vehicle involved.

4,161,059

METHOD OF FASTENING TO A BELT

Edgar Francois, Bethel, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Jul. 11, 1977, Ser. No. 814,357
Int. Cl.[2] B23P *11/00*
U.S. Cl. 29—432 **4 Claims**

1. The method of fastening together flexible belts having reinforcing cords therein comprising:

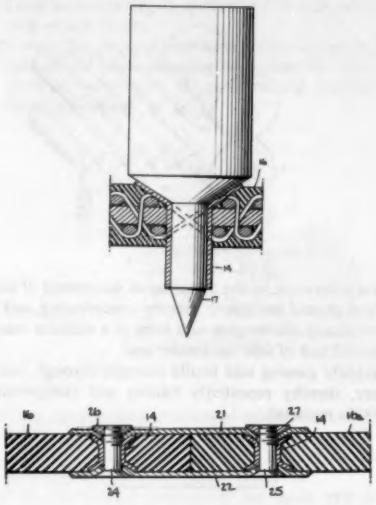
piercing each belt with a piercing tool having a sleeve thereon to form an aperture in each belt, thereby positioning a sleeve in each of said apertures formed in said belts, said piercing tool being effective to minimize breaking of said reinforcing cords;

terminating the ends of each of said sleeves substantially at the surfaces of each belt;

positioning reinforcing plate means having apertures aligned with said apertures of said belts on each side of said belts; and

joining said belts by bolting together said plate means and said belts with bolts extending through said sleeves.

3. The method of fastening together a rigid plate having an aperture therein and a flexible belt having reinforcing cords therein comprising:



piercing said belt with a piercing tool having a sleeve thereon to form an aperture in said belt; thereby positioning the sleeve in said aperture formed in said belt, said piercing tool being effective to minimize breaking of said reinforcing cords;

terminating the ends of said sleeve substantially at the surface of the belt;

determining the relative positions of said rigid plate and said belt to align said aperture of said rigid plate and said aperture of said belt;

and fastening together said plate and said belt with a bolt extending through said aperture of said plate and through said sleeve.

4,161,060

PROCESS FOR THE PRODUCTION OF A MOULD FOR MOULDING A SPECTACLE FRAME FRONT

William Lenne, Gagny; Jean F. Bourdot, Paris, and Guy Rolland, Vincennes, all of France, assignors to Essilor International (Cie Generale d'Optique), Joinville le Pont, France

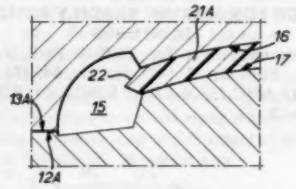
Filed Dec. 1, 1977, Ser. No. 856,581
Claims priority, application France, Dec. 17, 1976, 76 38040
Int. Cl.[2] B22D *11/126;* B21D *33/00;* B29C *1/02;* B29N *9/00*
U.S. Cl. 29—527.1 **5 Claims**

1. A process for the production of a mould for moulding a spectacle frame front from a prototype pattern, comprising:

producing from a prototype two metallic half-moulds having complementary abutting mould faces, the moulding surface of each half mould being formed with a bridge cavity, two annular rim depressions one on each side of the bridge cavity and support surfaces bounded by the rim depressions for supporting false lenses;

employing the half-moulds, in a first phase, for moulding at least one webbed frame front;

cutting a pair of false lenses out of the webbed frame front; and



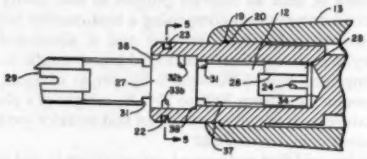
setting back the abutting mould faces in a second phase by a total depth at least equal to the moulding shrinkage of the false lenses so that the false lenses can be gripped between the support surfaces when the mould faces abut.

4,161,061

TERMINATION TOOL BLADE AND SLIDE APPARATUS

John R. Mason, Thousand Oaks, and Donald L. Gregson, Paradise, both of Calif., assignors to Dracon Industries, Chatsworth, Calif.

Filed Jun. 17, 1977, Ser. No. 807,441
Int. Cl.[2] H01R *43/00*
U.S. Cl. 29—566.4 **6 Claims**



1. A tool for terminating electrical conductors at a termination clip, comprising:

a manually engageable handle,

a slide in said handle mounted for sliding lengthwise movement therein,

means mounted in said handle for yieldably urging said slide outwardly therefrom, for limiting outward movement of said slide, and for impacting said slide,

a termination blade,

a termination end on said blade adapted to contact the termination clip,

means disposed between said slide and said termination blade for removably interlocking said blade in one position with said slide, so that when the electrical conductor is positioned adjacent to the terminal clip and said termination end is forced thereagainst, the conductor is seated therein by the impact on said slide,

said means for removably interlocking said blade to said slide including a cam follower member mounted on said slide being yieldably urged toward said termination blade, a cam surface on said termination blade aligned with said cam follower member, so that when said cam surface is forced past said cam follower member in one direction said termination blade is interlocked with said slide, and when said cam surface is forced in the opposite direction it is removable therefrom,

a bore on the outward end of said slide formed to accept said termination blade,

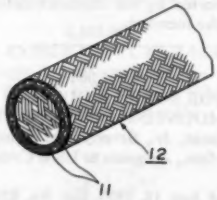
a cylindrical collar on said termination blade disposed to fit within said bore, said collar having an L-shaped groove on the surface thereof formed to accept said cam follower member, said L-shaped groove having one segment aligned with the collar cylindrical axis, and the other segment aligned circumferentially thereon, said cam surface being in the bottom of said circumferentially aligned groove segment, whereby an inward and rotary motion sequence of said blade in said slide with said cam follower member aligned with said one segment interlocks said blade and slide.

4,161,062

METHOD FOR PRODUCING HOLLOW SUPERCONDUCTING CABLES

Ko Agatsuma, Akishima; Kenichi Koyama, Tokorozawa; Itaru Todoriki, Tanashi; Tetsuo Yamaguchi, Yokohama; Osamu Kohno, Chiba, and Takashi Saito, Yokohama, all of Japan, assignors to Agency of Industrial Science and Technology and The Fujikura Cable Works, Ltd., both of Tokyo, Japan

Filed Oct. 26, 1977, Ser. No. 845,770
Claims priority, application Japan, Nov. 2, 1976, 51-131264; Nov. 2, 1976, 51-131265
Int. Cl.[2] H01V *11/00*
U.S. Cl. 29—599 **10 Claims**



1. In a method of producing hollow superconducting cables, comprising taking an elongated hollow conductor of normally conducting material, the periphery of which is provided in its lengthwise direction with at least one groove penetrating part-way towards the longitudinal axis of the hollow conductor, and locating within said groove a multifilament superconductor extending along the length of said groove, the improvement wherein the multifilament superconductor to be located in said groove is made beforehand by the steps of:

(a) forming a multiplicity of composite wires, each composite wire containing at least two metallic elements that are mutually diffusible upon diffusion heat treatment to become a superconducting intermetallic compound;

(b) braiding respective pluralities of said composite wires together to form a braided sleeve;

(c) deforming said braided sleeve to provide it with the cross-sectional profile of said groove; and

(d) subjecting said at least two metallic elements of the composite wires in the deformed braided sleeve to diffusion heat treatment causing said elements mutually to diffuse and become said superconducting intermetallic compound, thereby transforming said deformed braided sleeve into the multifilament superconductor to be located in said groove.

4,161,063

METHOD OF MAKING A CATHODE FOR AN ELECTROCHEMICAL CELL

Franz Goebel, Ashland, and Nikola Marincic, Winchester, both of Mass., assignors to GTE Laboratories Incorporated, Stamford, Conn.

Division of Ser. No. 763,845, Jan. 31, 1977, Pat. No. 4,086,397. This application Dec. 15, 1977, Ser. No. 860,699
Int. Cl.[2] H01M *4/88, 4/96*
U.S. Cl. 29—623.5 **7 Claims**

1. A method for constructing a large, highly active cathode electrode for use in an electrochemical cell comprising the steps of:

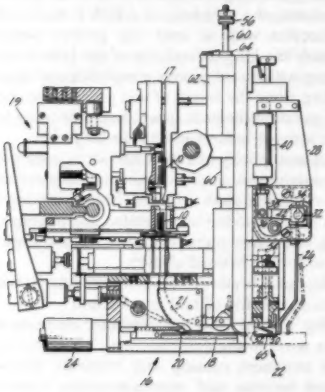
forming a porous, semi-rigid dough of cathode material;
drying the dough;
breaking up the dried dough to form a mass of discrete porous conglomerates; and

pressing a quantity of the conglomerates onto a rigid electrically conductive screen-like member so that the conglomerates substantially fill the interstices therein and are structurally supported by the interstice-defining members of the screen-like member.

4,161,064
MACHINES FOR BOARD MOUNTING AND SOCKET MOUNTING COMPONENTS

Daniel W. Woodman, Jr., Beverly, and Henry L. Wright, Ipswich, both of Mass., assignors to USM Corporation, Farmington, Conn.

Filed Aug. 18, 1977, Ser. No. 825,824
Int. Cl.[2] H05K *3/30*
U.S. Cl. 29—741 **7 Claims**

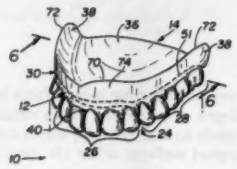


1. In a machine for separately inserting in circuit boards both successive electronic components and sockets for mounting said components, the components and sockets respectively having a body and dual in-line leads extending in parallel therefrom and the sockets having portions shaped to receive the component leads endwise, said machine having an inserting means and a means for releasably supporting each socket or component above a board and in alignment with the inserting means, first mechanism operative to mount a component in a socket preinserted by the machine, said mechanism comprising a device movable into and out of cooperative relation with the supporting means to align leads of the component with the lead receiving portions of the pre-inserted socket, said device comprising a member having one portion formed to engage and position a face of the socket when on the supporting means and another portion formed to engage and position end leads of the component when on the supporting means in predetermined offset relation to said positioned face of the socket, and other mechanism for operating said member in time relation to said inserting means.

4,161,065
METHOD FOR MAKING READILY RESHAPABLE DENTURES

John Gigante, 600 Hilltop Ter., Cliffside Park, N.J. 07010

Filed Oct. 7, 1977, Ser. No. 840,154
Int. Cl.[2] A61C *13/04, 13/10;* **B29C** *5/04;* **B29D** *3/00*
U.S. Cl. 32—2 **67 Claims**

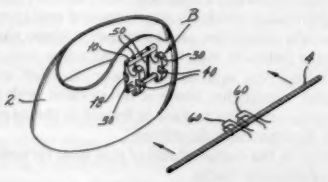


1. A method for maufacturing an article used to produce an artificial denture comprising the steps of:
A. placing a set of artificial teeth including anterior and pasterior teeth in a mold having a cavity along the base portion of the teeth,
B. filling a limited portion of said cavity with a first composition comprising a curable mixture of a first polyacrylic powder and a liquid acrylic monomer,
C. filling at least an anterior portion of said cavity with a second composition comprising a heat-curable mixture of a second polyacrylic powder and a plasticized liquid acrylic monomer, said plasticized liquid acrylic monomer comprising from 30% to 90% by weight of liquid acrylic monomer and from 70% to 10% by weight of a plasticizer mixture so as to embed certain of said anterior teeth in said second composition, and
D. curing said first and second compositions in said cavity to integrally join same together and to obtain a rigid frame structure from which said teeth depend, whereby in producing said artificial denture said second composition containing certain of said anterior teeth is remoldable and said anterior teeth are adjustable with finger pressure to closely conform to desired portions of an oral cavity and said frame portion comprised of said first composition concurrently remaining rigid.

4,161,066
ORTHODONTIC BRACKET

Jim B. Morrow, 10701 Meath Dr., St. Louis County, Mo. 63123, and Peter G. Sotiropoulos, 100 S. Fairway Dr., Belleville, Ill. 62223

Filed Jun. 20, 1977, Ser. No. 808,189
Int. Cl.[2] A61C *7/00*
U.S. Cl. 32—14 A **17 Claims**



2. In combination with an arch wire which is adapted to extend along a row of teeth, an improved orthodontic bracket for connecting the tooth with the arch wire, said bracket com-

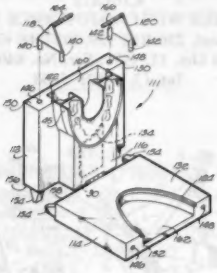
prising: a base attached to the tooth or to a band that fits around the tooth, the base having at least one slide way that extends along it in a generally horizontal direction; at least one insert engaged with the slide way and being configured such that it is free to slide horizontally along the way, but cannot be withdrawn outwardly from the way or moved vertically with respect to the way, the insert further having an outwardly presented portion that is configured to receive the arch wire extended along the row of teeth, and securing means for fastening the insert to the base in any one of a plurality of fixed positions to which it may be moved along the slide way, said means providing a positive stop to movement of the insert in either direction horizontally along the way.

4,161,067

METHOD FOR CONSTRUCTING REGISTERED TEETH CASTINGS

Ivan Bekey, 517 Erskine Dr., Pacific Palisades, 90272, and Roger S. Wolk, 28 Malibu Colony Dr., Malibu, both of Calif. 90265

Filed Nov. 29, 1976, Ser. No. 745,712
Int. Cl.[2] A61C 9/00
U.S. Cl. 32—17 **5 Claims**



1. A method for obtaining castings of registered upper and lower dental impressions separated by at least one non-porous, bite-deformable septum, comprising:

simultaneously obtaining registered dental impressions of a patient's upper and lower teeth by simultaneously biting into impression material that is separated by said septum and deforming said septum with said upper and lower teeth;

transferring said dental impressions to a mold without disturbing their registration;

forming two registered mold cavities separated by said non-porous, bite-deformed septum, one of which incorporates the upper dental impression and one of which incorporates the lower dental impression;

casting an impression of each mold cavity while maintaining registration of the mold cavities; and,

removing the separate upper and lower dental castings from the mold.

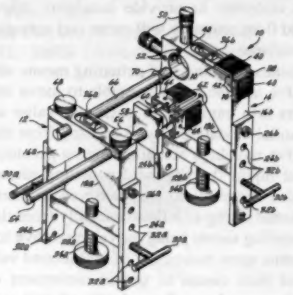
4,161,068

APPARATUS AND METHOD FOR ALIGNING SHAFTS

Thomas M. McMaster, 1490 Donnelly Rd., Mt. Vernon, Wash. 98273

Filed Nov. 30, 1977, Ser. No. 855,752
Int. Cl.[2] G01B 5/24
U.S. Cl. 33—412 **30 Claims**

5. An apparatus for aligning a pair of shafts comprising: a pair of blocks having means for aligning and leveling a separate block on each of a pair of shafts to be aligned, cooperating ronchi ruling means extending between the two blocks for indicating angular misalignment by exhibiting a Moire fringe pattern, and a second cooperating means extending between



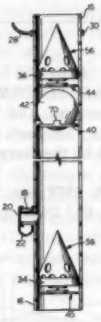
the two blocks for measuring parallel misalignment between the shafts.

4,161,069

ELONGATED FLEXIBLE LEVEL FOR USE AS TRANSIT

Angelo Cubeta, Maple Ave., Higganum, Conn. 06441

Filed Nov. 21, 1977, Ser. No. 853,025
Int. Cl.[2] G01C 5/04, 9/22
U.S. Cl. 33—367 **14 Claims**



1. An elongated flexible level assembly for use as a transit and the like comprising:

A. a pair of float assemblies each comprising:

(1) a housing providing a chamber therewithin with a flow passage thereinto adjacent its lower end;

(2) a first valve seat in said chamber adjacent to said flow passage and between said flow passage and the upper end of said chamber defining a first valve opening;

(3) a first valve member reciprocable in said chamber relative to said first valve seat to effect sealing of said first valve opening upon seating on said first valve seat;

(4) a second valve seat in said chamber spaced from said first valve seat towards said upper end of said chamber and defining a second valve opening;

(5) a second valve member reciprocable in said chamber relative to said second valve seat to effect sealing of said second valve opening upon seating upon said second valve seat;

(6) indicator means on said housing intermediate said first and second valve seats, said housing being transparent at least about said indicator means;

(7) float means movable in said chamber in response to fluid level above said indicator means to move said second valve member into seating engagement with said second valve seat and thereby prevent passage of liquid and air therethrough;

(8) valve member actuating means above at least said second valve seat, said actuating means comprising a member having its center of gravity spaced upwardly of its midpoint to provide instability whereby tilting of said float assembly will cause said actuating means to tip over; and

(9) means coupling said actuating means with each of said valve members and operable to move said valve members into engagement with said valve seats upon substantial deviation of said housing from the vertical, said valve members actuating means permitting flow of air and liquid thereby, said actuating means moving said valve members to seal said valve openings upon substantial tilting of a float assembly from the vertical, said coupling means being movable relative to said actuating means upon movement of said second valve member by said float means to permit movement of said second valve member independently of said actuating means; and

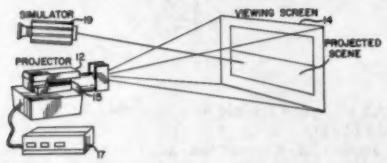
B. an elongated flexible conduit connected at its ends to said float assemblies to provide flow therethrough of associated liquid into said flow passages of said float assemblies, whereby, when both of said float assemblies are at the same height, the liquid level in said housings will register with said indicator means thereof and, when they are at different heights, the liquid level may rise in the lower thereof until said float means seals said second valve seat opening to prevent flow of air and liquid therethrough.

4,161,070

LASER RANGEFINDER TRAINER

Herman I. Pardes, Wanamassa, and Frederick B. Sherburne, Oceanport, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 20, 1978, Ser. No. 917,223
Int. Cl.[2] F41G *3/26*
U.S. Cl. 35—25 **6 Claims**



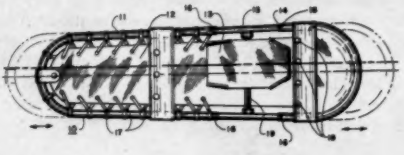
1. An electro-optical rangefinder training system comprising a means for simulating a rangefinder operation including means for ranging onto a target and setting a range indication, a picture projector and viewing screen, each picture including a scene portion and a target designating portion and having data encoded thereon to indicate the range of targets on the picture, laser means associated with said ranging means to trigger a laser beam upon actuating said rangefinder, said projector including optic means for projecting a picture onto said screen, said screen reflecting the visual light and laser beam impinging thereon; and said projector optic means providing from each picture a scene portion and target visible to the eye and a target aperture, corresponding to the target, superimposed thereon and invisible to the eye but susceptible to a laser beam impinging thereon; and laser beam detection means, said projector optic means directing the laser beam reflected from said target to said detection means when said laser beam has hit the target, and means for receiving encoded data from said picture corresponding to the range of the target which has been hit whereby the setting on the ranging means may be compared with the actual range to the target.

4,161,071

SNOWSHOE

Fritz Maul, 3768 S. 189th Pl., Seattle, Wash. 98188

Filed Sep. 9, 1977, Ser. No. 831,802
Int. Cl.[2] A43B *5/04*
U.S. Cl. 36—125 **6 Claims**



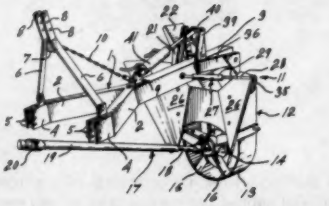
1. In a snowshoe having a frame defining the outer perimeter configuration of said snowshoe, a webbing mounted to said frame and suitably covering the interior area defined by said frame, and a binding mounted to said frame, the improvement of: mounting said binding asymmetrically with respect to the rectilinear centerline of said frame.

4,161,072

DITCH DIGGER WITH ADJUSTABLE SIDE WINGS

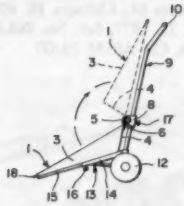
Normand Pronovost, 256 Rte. 159, St. Tite, Canada

Filed Oct. 11, 1977, Ser. No. 840,640
Int. Cl.[2] E02F *5/08*
U.S. Cl. 37—93 **4 Claims**



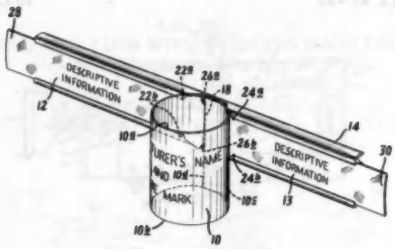
1. A ditch digger comprising a frame defining a longitudinal direction and a pair of opposite ends in said longitudinal direction, said frame comprising a boom having a Y shape planar configuration and including a pair of front branches forwardly diverging from each other and a rear projection, connection means operatively connecting said frame to a tractor vehicle, said connection means including the outer end of said branches being constructed and arranged for pivotal connection to lower hitch arms of a tractor, a pair of arms pivotally connected to said front branches respectively and to an upper hitch point of a tractor, and an adjustable link angularly suspending said boom relative to said pair of arms, a digging rotor unit carried by said rear projection and including a stator structure and a digging rotor, the latter being rotatively carried by said stator structure for transverse rotation about an axis extending in said longitudinal direction, and having a lower half radially sinkable in operatively axial digging engagement with the ground, and a pair of grading blades laterally projecting on the opposite sides respectively of the stator structure and angularly adjustable laterally outward relative to said lower half for selective transverse sloping of the sides of the ditch, said digging rotor unit being pivotally suspended at the end of said rear projection, a linkage system and an actuator connected to said digging rotor unit and to said frame and operatively articulating the same vertically relative to each other constructed and arranged to maintain said digging rotor in relatively the same upright attitude irrespective of the depth setting of said digging rotor unit.

4,161,073
SNOW SCOOP
William Oakes, 104 State St., Newburyport, Mass. 01950
Filed Nov. 4, 1977, Ser. No. 848,395
Int. Cl.[2] E01H 5/02
U.S. Cl. 37—130 4 Claims



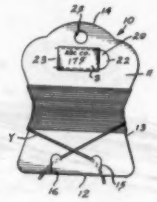
1. A snow scoop attachment comprising:
(a) a scoop;
(b) means for rotatably attaching said scoop to a frame; and
(c) means for slideably attaching said scoop to said frame, and wherein said rotatable attaching means comprises:
a plurality of strap hinges attached to said scoop;
a bar rotatably received by said hinges; and
a plurality of brackets adapted for receiving a frame and rotatably receiving said bar.

4,161,074
THREE-DIMENSIONAL PRODUCT MARKER
George L. DePinna, Forest Hills, N.Y., assignor to Goodren Products Corp., Englewood, N.J.
Filed Mar. 22, 1977, Ser. No. 780,166
Int. Cl.[2] G09F 1/00
U.S. Cl. 40—124.1 6 Claims



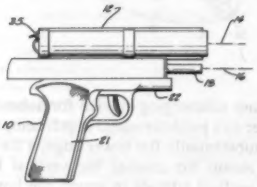
1. A three-dimensional product marker comprising a flat flexible sheet having an information-bearing front surface and having upper, lower and side edges, and first and second support panels extending outwardly from side edges of the flat sheet, said panels having front and rear surfaces, and said flat sheet having a vertical slit formed in the sheet adjacent the first support panel, said vertical slit spaced from said upper and lower edges and sized to receive the second support panel and thereby permit the first and second support panels to be pulled across and away from each other behind the flat sheet to impart a three-dimensional shape to the flat sheet and place on the same side the information-bearing surface of the flat sheet and the rear surfaces of the support panels.

4,161,075
THREAD AND YARN ORGANIZER
Ann S. Eubanks, 6737 Moss Lake Dr., Chattanooga, Tenn. 37343, and Celeste M. Steinkraus, 204 E. Lake Shore Ter., Chattanooga, Tenn. 37415
Filed Feb. 21, 1978, Ser. No. 879,664
Int. Cl.[2] B65H 75/06, 75/28; G09F 3/08
U.S. Cl. 40—309 3 Claims



1. Apparatus for holding a flexible strand of yarn of indeterminate length, comprising a thin, substantially flat body of flexible thermoplastic material, said body including first and second end walls connected by side walls, said side walls tapering inwardly from said first and second end walls and defining a reduced waist about which a strand of yarn may be wound, said first end wall being substantially straight from side to side of said body and generally normal to the longitudinal axis thereof, a pair of oppositely facing substantially "J" shaped slits extending inwardly from said first end wall for receiving and frictionally retaining opposite ends of said yarn, each of said "J" shaped slits having a relatively straight portion and a hook portion, said straight portions being generally parallel to the longitudinal axis of said body, a tongue cut from said body between said reduced waist and said second end wall, said tongue having substantially parallel sides which are generally parallel to said first end portion and having a free end, the base of said tongue being integrally connected to said body so that a portion of said tongue may be displaced out of the plane of said body to removably receive an indicia bearing member, said portion of said tongue being repositionable in the plane of said body to assist in frictionally retaining said member thereon, and said body having an opening located adjacent to said second end wall for hanging said body from a support member.

4,161,076
AIMING SYSTEM FOR WEAPONS
Wesley L. Snyder, 1103 Forest Home Dr., Houston, Tex. 77094
Filed Oct. 31, 1977, Ser. No. 846,691
Int. Cl.[2] F41G 1/34
U.S. Cl. 42—1 A 34 Claims



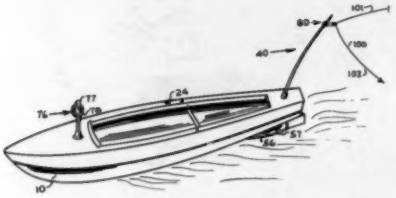
1. An aiming system for attachment to a weapon having an elongate barrel which comprises:
a dust-proof housing member attached to said weapon;
a laser enclosed within said housing member for projecting a coherent beam of light onto a target; and
a buffer interposed between said housing member and said laser, said buffer cushioning said laser from shock upon recoil of the weapon.

4,161,077

RADIO CONTROLLED FISHING APPARATUS

Charles J. Ciaccio, 4060 Byron Ave., Titusville, Fla. 32780, and Harry A. Rinehart, Titusville, Fla., assignors to Charles J. Ciaccio, Titusville, Fla.

Filed May 8, 1978, Ser. No. 903,732
Int. Cl.[2] A01K *97/00*; A63H *23/02*
U.S. Cl. 43—26.1 10 Claims



1. A combination fishing apparatus and toy vessel for controllably towing a section of fishing line intermediate a baited end and the angler, said fishing apparatus comprising in combination:

a floating body;

radio receiver means having an antenna coupled thereto for receiving radio control signals from a distant command transmitter, with said radio receiver means having first demodulator means for reconstructing a first signal from said radio control signals;

power means operably coupled to said radio receiver means for propelling said floating body over the surface of a body of water responsive to said first signal; and

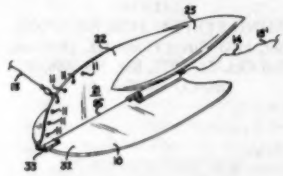
line release means coupled to said antenna adjacent a distended end thereof for receiving therethrough and controllably releasing the intermediate section of the fishing line responsive to the tension on the fishing line exceeding a predetermined limit.

4,161,078

FISHING LINE SUBMERGING DEVICE

George B. Pagani, 733 Melva Ave., Oakdale, Calif. 95361

Continuation-in-part of Ser. No. 740,222, Nov. 9, 1976, abandoned. This application Feb. 8, 1978, Ser. No. 876,058
Int. Cl.[2] A01K *95/00*
U.S. Cl. 43—43.13 4 Claims



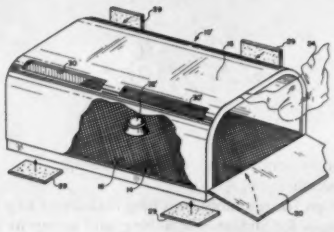
1. A fish-line submerging device for submerging a fishing line and leader to a predetermined depth comprising, a vertical fin having a substantially flat lower edge, a forward tip and an upper edge, means for causing the vertical fin to assume a substantially vertical attitude in water, the horizontal fin having a forward point and a rearward edge with said forward point rotatively affixed to said forward tip of the vertical fin, a detent member affixed to the rearward portion of said flat lower edge of the vertical fin, means for urging said detent member into locking contact with the rearward edge of the horizontal fin, means for attaching the leader to said detent member at an attaching position, a series of means for attaching the fishing line at a predetermined attaching point at said upper surface of the vertical fin, whereby upon a predetermined tension in said leader line, the detent mechanism releases the horizontal fin and the fin thereby rotates freely about the vertical fin at its forward tip.

4,161,079

INSTANT MOUSE TRAP

Isaac Hill, 6340 S. Honore St., Chicago, Ill. 60636

Filed Dec. 27, 1977, Ser. No. 864,534
Int. Cl.[2] A01M *23/00*
U.S. Cl. 43—58 10 Claims



1. A trap for rodents or like pests comprising:

an enclosure for the pest to enter;

means for ensnaring the pest in the enclosure;

a charge of separately covered bait material mounted to the enclosure;

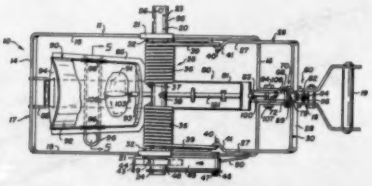
means for uncovering said covered bait material within the enclosure, said means for uncovering being operable externally of said enclosure, whereby covered bait material may be stored for a long period of time and yet easily released when desired.

4,161,080

ADJUSTABLE ANIMAL TRAP

William Gabry, Box 10, Vavenby, Canada

Filed Apr. 17, 1978, Ser. No. 896,845
Int. Cl.[2] A01M *23/30*
U.S. Cl. 43—82 10 Claims



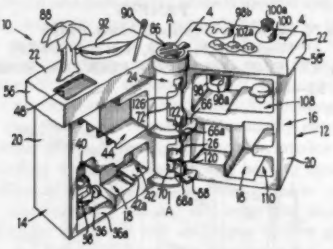
1. An adjustable animal trap comprising a base frame having a fixed jaw, a winding shaft journalled across the base frame spaced from the fixed jaw, an upper frame swingingly mounted at one end on the winding shaft and having a striker jaw at the opposite end thereof, spring means operatively connecting the winding shaft to the upper frame, control means normally permitting rotation of the winding shaft in one direction only, a trigger assembly for releasably securing the upper frame to the base frame with the trap in a set position, lever means for rotating the winding shaft in said one direction whereby to tension the spring means and apply a selected spring pressure biasing the trap towards a shut position, bait support means carried by the base frame and including a bait holder near the fixed jaw, and a release member operatively connecting the trigger assembly to the bait holder whereby the upper frame is released and the trap is allowed to snap shut only when a pulling force is exerted on said bait holder.

4,161,081

AMUSEMENT SET

Allison W. Katzman, Chicago; Palmer J. Schoenfield, Evanston, and Burton C. Meyer, Downers Grove, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 10, 1978, Ser. No. 876,401
Int. Cl.[2] A63H *33/00*
U.S. Cl. 46—11 23 Claims



1. An amusement set (for use particularly by children), comprising:

a carrying case including a pair of mating hollow housing members pivotally connected along one edge to open and close along a peripheral seam line around each member, each of said hollow housing members including internal wall means therein defining a plurality of rooms at different levels when said housings are rested on a bottom wall in an open position;

a hollow, elevator shaft in coaxial alignment with the axis of pivotal interconnection between said housing members extending between said different levels, said shaft having openings at said different levels exposed between said housing members when in an open condition; and

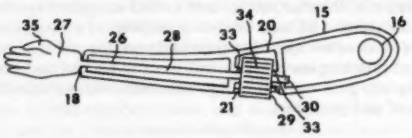
an elevator manually movable in said shaft between said different levels.

4,161,082

FIGURE TOY LIMB WITH TWIRLING HAND UNIT

Brian S. Alexander, 907-1 Austin, Evanston, Ill. 60202

Filed Nov. 28, 1977, Ser. No. 855,160
Int. Cl.[2] A63H *7/00, 3/46*
U.S. Cl. 46—119 3 Claims



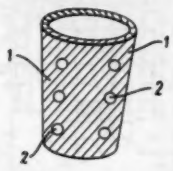
1. A figure toy limb comprising, in combination, an arm having a hollow portion, multiple supporting standards within said hollow portion, an outer chamber opening in the wall of said hollow portion, a twirling hand unit held by said arm portion, said twirling hand unit including an axle mounted on said standards and easily rotatable thereon, a figure toy hand non-rotatably attached at one end of said axle and a cylindrical turning wheel non-rotatably attached near or at the other end of said axle, part of the said cylindrical turning wheel being accessible through the said outer chamber opening so that rotating the said cylindrical turning wheel (by finger) will impart a twirling motion to the said figure toy hand.

4,161,083

METHOD FOR VESSEL CULTIVATION OF *LENTINUS EDODES*

Noriyoshi Fuzisawa, Sakura, and Kenichi Hattori, Musashino, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed May 30, 1978, Ser. No. 910,953
Claims priority, application Japan, Jul. 29, 1977, 52-91012
Int. Cl.[2] A01G *1/04*
U.S. Cl. 47—1.1 9 Claims



1. A method for the vessel cultivation of *Lentinus edodes* comprising inoculating seed fungi of *Lentinus edodes* into a culture medium in a vessel, subjecting the innoculated culture medium to radiation, taking out the culture medium from the vessel after hyphae have been sufficiently developed in the culture medium and subjecting the culture medium to a fruiting body-producing treatment, said method being characterized in that a vessel comprising mainly light-impermeable portions but including localized light-permeable portions is used as the cultivation vessel.

4,161,084

METHOD FOR REDUCING TEMPERATURE AT WHICH PLANTS FREEZE

Deane C. Arny, Madison, Wis., and Steven E. Lindow, Berkeley, Calif., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jul. 3, 1978, Ser. No. 921,800
The portion of the term of this patent subsequent to Sep. 6, 1994, has been disclaimed.
Int. Cl.[2] A01G *1/00*
U.S. Cl. 47—2 11 Claims

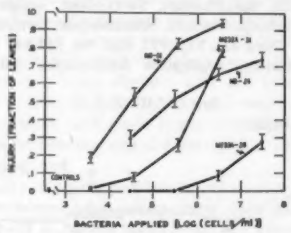


Figure Frost damage to HS33A protreated corn seedlings challenged with different cell densities of E. herbicola or P. syringae. Corn seedlings were sprayed 3 days prior to freezing at -4.5 C with 3×10^8 cells/ml HS33A in nutrient broth (● and ○) or with nutrient broth alone (0 and △) and were placed in a mist chamber. Two days prior to freezing plants were sprayed with different cell densities (shown on the abscissa) of P. syringae isolate #31 (□ and ■) or E. herbicola isolate #26 (◆ and ◇) in phosphate buffer and were returned to the mist chamber. Vertical bars represent the standard error of the determination of the mean.

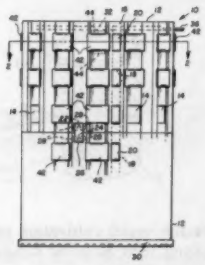
1. The method for protecting plants against frost injury comprising treating the plants by the application of non-ice nucleating bacteria in an amount sufficient to increase the population prior to the onset of freezing temperature to increase the proportion of non-ice nucleating bacteria to ice nucleating bacteria from that normally present on the plants thereby to reduce the temperature at which frost injury occurs.

4,161,085

GARDEN DEVICE AND METHOD OF PRODUCING SAME

F. Wesley Moffett, Jr., 944 Allens Creek Rd., Rochester, N.Y. 14618

Filed Mar. 20, 1978, Ser. No. 888,350
Int. Cl.[2] A01G *9/021*
U.S. Cl. 47—82 18 Claims



1. A garden device for producing a vertically oriented garden comprising:

a first vertically extending endless wall enclosure for receiving a quantity of growing medium, said first wall enclosure comprising a vertically oriented flexible sheet having vertically spaced plant openings extending therethrough; and

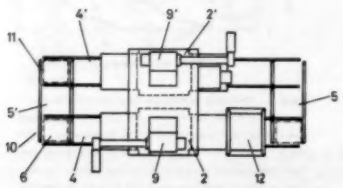
a flexible cover slip for releasably covering each plant opening, each of said cover slips having means for releasably attaching said slip to said sheet for covering one of said plant openings to prevent the escape of the growing medium and moisture contained therein from said enclosure, and detaching said slip from said sheet to permit access to the growing medium through said one plant opening whereby a seed or plant may be embedded in the growing medium for growth through said one plant opening.

4,161,086

CONTINUOUS SHOT-BLASTING MACHINE

Sergej Toedtli, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Jul. 11, 1977, Ser. No. 814,847
Claims priority, application Switzerland, Jul. 13, 1976, 8995/76
Int. Cl.[2] B24C *3/10*
U.S. Cl. 51—418 14 Claims



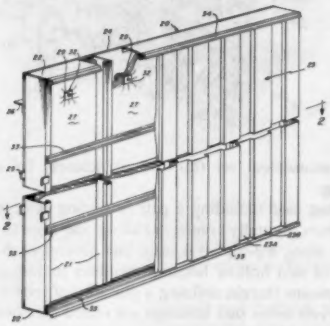
1. A continuous shot-blasting machine for surface treating batches of workpieces comprising at least one blasting chamber for shot-blasting the workpieces, first and second supporting racks for carrying the workpieces through said chamber, conveyor means for transporting said supporting racks with the workpieces through said chamber, at least one turn-over device for rotating one of said first and second supporting racks with workpieces thereon through 180 degrees about a substantially horizontal axis, and means for temporarily securing the workpieces to said supporting rack being rotated during rotation of said supporting rack and for releasing the workpieces from said supporting rack to deposit the turned-over workpieces onto the other one of said first and second supporting racks so that untreated surfaces of the workpieces are being exposed for shot-blasting treatment.

4,161,087

PANELS FOR USE IN CONSTRUCTING BUILDING WALL AND BUILDING WALLS INCLUDING SUCH PANELS

Clarence N. Levesque, Westford, Mass. 01886

Filed May 11, 1978, Ser. No. 904,936
Int. Cl.[2] E04F *13/12, 19/04;* E06B *1/04;* E04B *2/02*
U.S. Cl. 52—62 17 Claims



1. A modular panel for use in constructing the wall of a building, said panel including at least two channel members whose lengths do not exceed a predetermined maximum determined by transportation limitations, and a series of stud members welded to said channel members to provide a rigid framework dimensioned to provide a predetermined lengthwise and vertical portion of a wall of a building, finish sheet material secured to the inside of said framework to provide an inner panel wall, sections of insulation for at least some of the rectangular spaces established by said framework, said sections shaped and dimensioned to be a press fit in said spaces and fitted therein and frictionally held by said framework, a vapor barrier backed by said inner wall, said insulation sections lodged against said barrier, a plurality of vertically spaced sub-girts for the outer side of the framework and including one for each channel member and secured thereto and others secured to said stud members, corrugated metal panelling providing a series of spaced, vertical channels and outwardly disposed ribs, the channels secured to said sub-girts to provide an outer panel wall, said insulating sections of a thickness to provide a dead air space between said sections and said outer wall, and flashing anchored to said panel in back of said panelling by sub-girts and extending outwardly under the bottom edges of said panelling.

4,161,088

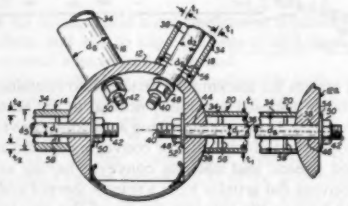
PIPE-AND-BALL TRUSS ARRAY

Paul F. Gugliotta, 39 E. 20th St., New York, N.Y. 10003, and David Hoffmann, 117 N. Jefferson St., Milwaukee, Wis. 53202

Filed Nov. 11, 1977, Ser. No. 850,646
Int. Cl.[2] E04B *1/56*
U.S. Cl. 52—223 R 27 Claims

1. In a pipe-and-ball truss array for supporting a deck surface thereon in a predetermined plane, said truss array comprising a plurality of truss members, at least one of said plurality of truss members comprising an outer chord of said truss array, at least a first hollow substantially ball-like member portion common to said plurality of truss members and first means for joining

said plurality of truss members to said first substantially ball-like member portion, each of said truss members comprising an outer hollow pipe element having a longitudinal axis and first and second ends with an inner rod element extending through said outer hollow pipe element, said inner rod element having first and second ends, said outer hollow pipe element having an outer surface, said first substantially ball-like member portion having a plurality of spaced apart apertures extending from the exterior surface thereof to the interior thereof, each of said inner rod element first ends having threads thereon and extending beyond said outer hollow pipe element first end and through an associated one of said first substantially ball-like member portion apertures, each of said outer hollow pipe element first ends bearing against said first substantially ball-like member portion exterior surface, said first joining means comprising first threadable nut means threadably mounted in said first substantially ball-like member portion interior on said inner rod element threaded first ends and bearing against the interior surface of said first substantially ball-like member portion for simultaneously placing said inner rod element of said truss member in tension and said outer hollow pipe element of the same truss member in compression for enabling applied tensile, compressive and axial forces to be transferrable between said joined truss members through said first substantially ball-like member for maintaining a force resistant three-dimensional prestressed truss array; the improvement comprising a structural tee element extending radially outward from



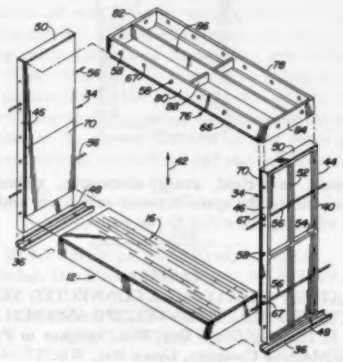
the outer surface of at least one of said outer chord outer hollow pipe elements in a plane normal to the plane in which the deck surface is to be supported on said truss array, said outer chord having a configuration comprising said structural tee element, said structural tee element being structurally integral with said outer chord outer hollow pipe element outer surface and comprising a radially extending portion and a first planar extending portion normal thereto, said first planar extending portion extending in a plane parallel to said deck surface supporting plane and being capable of structurally supporting said deck surface thereon above said structurally integral outer chord outer hollow pipe element outer surface in a single layered support system, said outer chord inner rod element and first joining means being disposed in said outer chord configuration for eccentrically prestressing said outer chord configuration, said other outer hollow pipe elements without said structural tee element having said inner rod element and said first joining means associated therewith disposed for axially prestressing said other outer hollow pipe elements, said eccentrically prestressed outer chord outer hollow pipe element having said structurally integrated radially extending structural tee element being structurally stronger in bending in said force resistant three-dimensional truss array than said other outer hollow pipe elements without said structural tee, whereby said deck surface is structurally supported in said force resistant three-dimensional truss array on said structural tee element bearing pipe elements in said single layered support system.

4,161,089

MODULAR BUILDING STRUCTURE SYSTEM

Martin B. Omansky, 10702 Green Mountain Cir., Columbia, Md. 21044

Filed Dec. 14, 1977, Ser. No. 860,386
Int. Cl.[2] E04C *3/10*
U.S. Cl. 52—227 **22 Claims**



1. A modular building structure comprising:

(a) a foundation member having an upper surface defining a base plane;

(b) at least one channel member formed in one piece formation secured to said foundation member;

(c) a plurality of wall panel members slidably insertable within said channel member, said wall panel members extending in a plane substantially orthogonal said base plane, each of said wall panel members being positionally located in abutting relation to a next successive wall panel member, said wall panel members having a wall panel frame member including a pair of opposing side wall panel frame members extending in a substantially orthogonal direction to said base plane, said opposing side wall panel frame members defining a first side wall panel member having at least one conically tapered slip pin member fixedly secured thereto extending in a direction substantially parallel said base plane and a second side wall panel member having at least one correspondingly conically tapered opening formed therethrough, said conically tapered opening being alignable with said conical slip pin member formed on said first side wall panel member of a next successive wall panel frame member for frictional engagement between said slip pin member and said conical opening; and,

(d) a plurality of ceiling panel members secured to said wall panel members, said ceiling panel members extending substantially in a plane parallel said base plane.

4,161,090

POST ASSEMBLY AND METHOD

Ridley Watts, Jr., 34000 Cedar Rd., Gates Mills, Ohio 44040

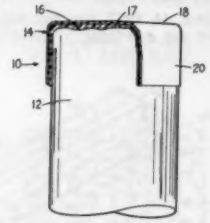
Filed Feb. 3, 1978, Ser. No. 874,875
Int. Cl.[2] E04H *12/00*
U.S. Cl. 52—301 **16 Claims**

1. A post assembly comprising:

a post with a solid or closed end,

a cover extending across said end and about side portions of

the post adjacent said end, said cover being spaced from said end, and



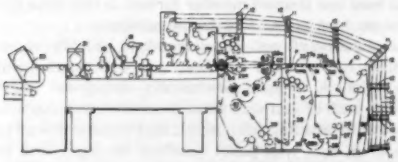
a foamed, semi-rigid, energy-absorptive, adhesive completely filling the space between said cover and said end and adhering the cover to the post.

4,161,091

APPARATUS FOR MAKING A CONNECTED SERIES OF STUFFED SEALED ENVELOPE ASSEMBLIES

Richard E. Hartnig, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Mar. 8, 1978, Ser. No. 884,691
Int. Cl.[2] B65B *11/48*
U.S. Cl. 53—206 **5 Claims**



1. Apparatus for making a connected series of stuffed sealed envelope assemblies, each having at least one insert ply and one return envelope therein comprising a frame,

means on said frame for advancing an elongated insert ply web along a first path,

means for advancing a series of return envelopes along a second path toward said first path and at a lineal speed faster than the speed of advance of said insert ply web,

knife roll means on said frame in said second path for controlling the advance of each return envelope and for directing each return envelope into said first path while transversely severing said insert ply web into segments, and

means on said frame for enveloping said return envelopes and insert ply segments between continuous webs.

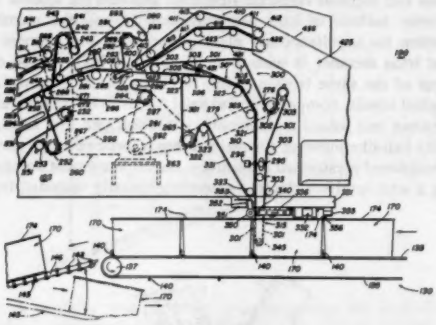
5. The apparatus of claim 1 in which said frame includes means for advancing an elongated return envelope web along said second path, means on said frame in said second path for applying adhesive to said return envelope ply web along longitudinally spaced apart, transversely extending bands, means on said frame in said second path for applying adhesive to said return envelope ply web along interrupted, longitudinally extending lines, means on said frame in said second path for transversely severing said return envelope ply web adjacent each of said transversely extending bands to define discrete return envelope plies, each having a specified length between the ends thereof and a transversely extending band of adhesive adjacent one end thereof, said interrupted lines of adhesive terminating adjacent the other end of each discrete return envelope ply, means on said frame in said second path for first folding each discrete return envelope ply on itself along a transverse line positioned between the ends thereof and closer to said other end than said one end to provide front and back panels with said back panel being shorter than said front panel, said folding step bringing said back panel into adhesive union with a portion of said front panel, the remainder of said front panel other than said portion constituting an envelope flap, and means on said frame in said second path for second folding each first folded return envelope ply on itself along a transverse line and develop said envelope flap.

4,161,092

FLAT ARTICLE HANDLING SYSTEM

John M. Buday, Des Plaines; Lawrence B. Holmes, Evanston, both of Ill.; Veljko Milenkovic, Birmingham, Mich., and Bernard Stevens, Skokie, Ill., assignors to Gard, Inc., Niles, Ill.

Continuation-in-part of Ser. No. 659,029, Feb. 18, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 849,108
Int. Cl.[2] B65B *5/08, 5/10*
U.S. Cl. 53—244 **47 Claims**



1. A system for stacking flat articles into containers with the flat articles disposed essentially normal to the bottoms of the containers, said system comprising a stacking conveyor including cooperating pinch belts for conveying the flat articles in a shingled stream, said stacking conveyor having an input end for receiving flat articles from a source thereof and a delivery end for feeding the shingled stream of flat articles from said stacking conveyor, means for moving a continuous line of containers and the delivery end of said stacking conveyor with respect to each other in a continuous manner, said delivery end being oriented essentially normal to the bottom of a container on said container conveyor, mechanism for shifting said delivery end and the containers with respect to each other following the filling of a container to place said delivery end at the front of the next empty container, stack support structure associated with said delivery end including one of said pinch belts extending into the associated container and terminating a short distance from the bottom thereof to support the forming stack of flat articles therein, and a following roller engaging the side of the shingled stream disposed away from said one pinch belt and resiliently urging the shingled stream against said one pinch belt during the relative shifting of the delivery end and the container, whereby said delivery end serves to feed the shingled stream of flat articles into successive containers to stack the flat articles therein without interruption.

4,161,093

METHOD AND APPARATUS FOR WRAPPING GROUPS OF CIGARETTES

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Pfuhl, Verden, Fed. Rep. of Germany

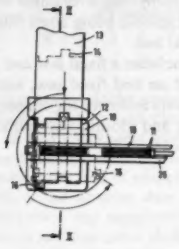
Filed Jul. 15, 1977, Ser. No. 816,069
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1976, 2632967
Int. Cl.[2] B65B *11/08*
U.S. Cl. 53—228 **2 Claims**

1. In an apparatus for wrapping a stack (10) of a plurality of

cigarette packs (**11**) in a carton blank (**12**), said blank being separable from a web of material (**13**) fed to the apparatus in a vertical plane wherein the longitudinal axis of said web is rotationally displaced from the longitudinal horizontal axis of said stack, the improvements characterized by:

(a) cutting means including a blade member (**24**) movable in a direction perpendicular to said vertical plane for severing a carton blank from said web,

(b) a vertically oriented blank holder (**15**) disposed adjacent said blade member but spaced therefrom in the direction of cutting movement thereof, said blank holder comprising a disc rotatable about its own median transverse axis perpendicular to said vertical plane,



(c) a plurality of suction holders (**16**) associated with said blank holder for retaining a severed carton blank thereon delivered thereto by the cutting movement of said blade member,

(d) means for rotating said blank holder and retained carton blank about said axis to align the axes of said blank with the horizontal axes of said stack, and

(e) a separate mouthpiece axially displaceable with respect to said blank and defining an opening through which said stack may be pushed, said mouthpiece including an upper edge comprising said blade member, and wherein said cutting means further comprises a stationary counter blade disposed on the opposite side of the web from said blade member which cooperates with the blade member of the mouthpiece to sever the blank from the web.

4,161,094

APPARATUS FOR PROCESSING BISCUITS OR THE LIKE

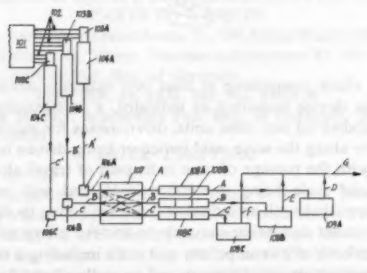
Otto Blidüng, Geesthacht; Gerhard Tolasch, wentorf, and Dietrich Bardenhagen, Hamburg, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Feb. 27, 1978, Ser. No. 881,822

Claims priority, application United Kingdom, Mar. 16, 1977, 11043/77; Fed. Rep. of Germany, Jan. 7, 1978, 2800570

Int. Cl.[2] **B65B** *57/00*

U.S. Cl. 53—493 **26 Claims**



1. Apparatus for processing biscuits which issue from an oven, comprising a plurality of conveyor means for transporting discrete rows of biscuits from the oven along a plurality of separate paths; means for accumulating the biscuits into a series of blocks in a first portion of each of said paths; a plurality of variable-output packing machines, one of each of said accumulating means and each disposed in a second portion of the respective path, said machines including devices for confining blocks of the respective series in containers; means for prorating the blocks of said series in third portions of said paths intermediate said first and second portions, including means for transferring equal numbers of blocks from one of said paths into each of the other paths in response to a reduction of the output of the machine in the second portion of said one path; and control means including means for increasing the output of the machines in the second portions of said other paths in response to transfer of blocks from said one path into said other paths.

4,161,095

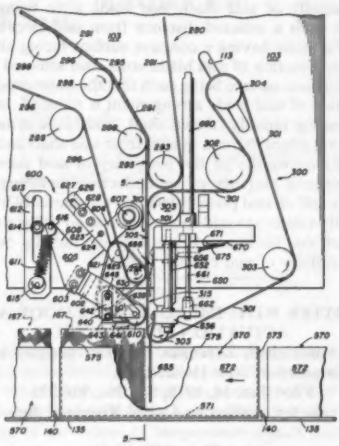
FLAT ARTICLE STACKING SYSTEM

John M. Buday, Des Plaines, Ill., assignor to Gard, Inc., Niles, Ill.

Filed Nov. 8, 1977, Ser. No. 849,702

Int. Cl.[2] **B65B** *5/08, 5/10*

U.S. Cl. 53—527 **20 Claims**



1. A system for stacking flat articles into containers with the flat articles disposed essentially normal to the bottoms of the containers, said system comprising a stacking conveyor including cooperating pinch belts for conveying the flat articles in a shingled stream, said stacking conveyor having an input end for receiving flat articles from a source thereof in a shingled stream, one of said pinch belts at the other end of said stacking conveyor terminating before the other pinch belt, the other end of said other pinch belt providing a delivery end for feeding the shingled stream of flat articles from said stacking conveyor, means for moving a continuous line of containers and the delivery end of said stacking conveyor with respect to each other in a continuous manner, said delivery end being oriented essentially normal to the bottom of a container on said container conveyor for feeding the shingled stream of flat articles thereinto, means for generating a gap in the shingled stream of flat articles that arrives at said delivery end at the completion of the filling of one container and ends when the next empty container is in position to receive the shingled stream, a following roller disposed adjacent to said delivery end and urging the shingled stream thereagainst to guide the shingled stream into the associated container, and drive mechanism for said following roller to drive said following roller in a direction to impart

an impetus to the flat articles in the shingled stream to feed them into the associated container.

4,161,096

BLADE ARRANGEMENT FOR A MOTOR DRIVEN SICKLE OR ROTARY MOWING MACHINES, AND SUCH MACHINES

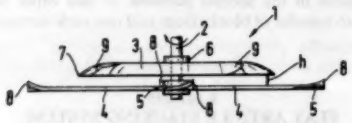
Hans Biberger, Landshuter Strasse 4, 8301 Ergolding-Landshut, Fed. Rep. of Germany

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1976, 2635807

Filed Nov. 22, 1976, Ser. No. 744,047

Int. Cl.[2] A01D *55/18*

U.S. Cl. 56—12.9 11 Claims



1. A blade arrangement for a motor driven sickle or rotary mowing machine adapted for ejection of cut grass into a grass collecting container, comprising a rotatable blade shaft, a substantially circular plate fixed on said shaft, blade arms extending radially of said shaft, said blade arms being spaced along said shaft a selected distance from said circular plate, said circular plate having a concave surface facing along said shaft in the direction of said blade arms, said selected distance and said concave surface being such that the noise produced by the operation of said blade arrangement is reduced, said blade arms extending radially of said shaft, said blade arms having blade cutting edges thereon spaced from said shaft and extending radially outwardly of the periphery of said substantially circular plate, a plurality of air deflecting members on said blade arms and on said plate distributed substantially uniformly peripherally relative to said shaft each said air deflecting member on each said blade arm being disposed radially outwardly of said periphery of said circular plate.

4,161,097

KNOTTER WITH IMPROVED BILLHOOK AND ACTUATION MECHANISM

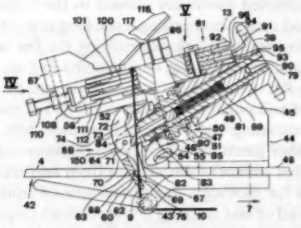
Marc G. Vansteelant, Zedelgem, Belgium, assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Jun. 16, 1978, Ser. No. 916,371

Claims priority, application United Kingdom, Jun. 21, 1977, 25939/77

Int. Cl.[2] A01D *39/00*

U.S. Cl. 56—343 4 Claims



1. In a crop baling machine having an elongate bale case, a pickup and infeed mechanism for delivering crop material into said bale case, a packing mechanism at least partially within said bale case for compressing the crop material therein into a compact mass and forcing it through said bale case, a twine dispensing mechanism including at least one twine carrying needle movable through said bale case, and a knot tying mechanism on said bale case for cyclically receiving twine from said needle and tying a knot in primary and secondary portions thereof to provide separate discrete packages of crop material, said knot tying mechanism including a support frame, means mounted on said frame for holding the primary and secondary portions of the twine in a substantially side-by-side relationship extending along a predetermined path, said means for holding including a rotatable means, said path movable with the rotation of said rotatable means between at least first and second positions, a billhook including an elongate shaft rotatably mounted on said frame adjacent said twine holding means, an actuation means also mounted on said frame adjacent said billhook to open and close same at selected locations along its rotary path, and means for rotating said rotatable means and said billhook in timed relation, the improvement wherein:

said actuation comprises a rotatable cam mounted on a fixed spindle, said spindle being fixed relative to the rotation of said billhook; and

said billhook includes a fixed jaw and a movable jaw pivotably mounted on said fixed jaw, said movable jaw further including a cam follower for contacting said rotatable cam and opening and closing said billhook in response to the surface variations of said cam.

4,161,098

CLOCK HAVING A LINEAR SCALE

Kurt Ingendahl, Seefeldstrasse 152, Zurich, Switzerland

Filed Mar. 1, 1976, Ser. No. 662,895

Claims priority, application Switzerland, Mar. 3, 1975, 2650/75; Dec. 12, 1975, 16161/75

Int. Cl.[2] G04B *45/00, 19/06*

U.S. Cl. 58—2 32 Claims

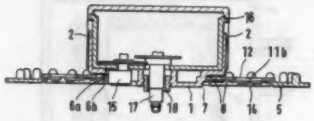
1. A clock comprising at least one indicator device, said indicator device including an indicator, a substantially linear scale subdivided into time units, drive means for moving said indicator along the scale, said indicator being driven in accordance with the passage of time in its path of travel along said scale, said scale being one-dimensional, and said indicator being provided with an indicator mark indicating its direction of movement and being movable to-and-fro along said scale between both of its end points, said scale including a rod with scale markers arranged thereat, and an endless band for carrying the indicator, said rod being provided at its ends with drive and bearing means for rollers driving and deflecting the band.

4,161,099

DAY AND DATE INDICATOR FOR CLOCKS

Erwin Storz, Bad Durrheim, Fed. Rep. of Germany, assignor to Keinzle Uhrenfabriken GmbH, Schwenningen, Fed. Rep. of Germany

Filed Nov. 23, 1977, Ser. No. 854,310
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1977, 7707132[U]
Int. Cl.[2] G04B *19/24;* G09D *3/08*
U.S. Cl. 58—4 R 9 Claims



1. A day and date indicator for clocks, comprising a carrier structure adapted to be attached to said clock adjacent the clockwork mechanism of said clock, said clockwork mechanism having at least one indicator shaft extending outwardly from said mechanism toward the face of said clock for moving the hands of said clock, a flat annular date disc extending parallel to the face of said clock and supported by said carrier structure for rotation about said indicator shaft, said date disc having an outer surface bearing date indicia thereon, a flat annular day disc supported by said carrier structure for rotation about the axis of said indicator shaft in a plane parallel to the plane of said date disc, said day disc having a flat surface bearing indicia thereon indicating the days of the week, the inner peripheral edge of said annular date disc being disposed closely adjacent to and having substantially the same diameter as the inner peripheral edge of said annular day disc, said two inner peripheral edges of said discs each having a plurality of gear teeth adapted to cooperate with a rotatable cam driven by said clockwork mechanism, said cam being located radially inward of the gear teeth of both said discs when said carrier structure is attached to said clock and including an eccentric portion shaped to periodically engage gear teeth of both of said discs for simultaneously advancing both of said discs in periodic step-by-step motion in the same direction of rotation about said indicator shaft, the side of each of said discs opposite to the indicia bearing side thereof including a plurality of outwardly projecting pins disposed in a circular locus for use in selectively setting the disc to a desired indicating position, said date disc including slots therein to provide access through said date disc to the outwardly projecting pins of said day disc for purposes of setting said day disc, and detent means extending from said carrier structure adjacent the inner peripheral edges of said day and date discs in angularly spaced relation to said cam, said detent means resiliently engaging said day and date discs respectively to hold said discs in their respective set positions when said discs are not being advanced by said cam.

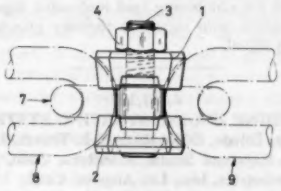
4,161,100

ATTACHMENT DEVICE FOR SECURING STRUCTURAL PARTS TO A CHAIN

Hans H. Dalferth, Haydenstrasse 21, 708 Aalen-Wasseralfingen, and Dieter A. G. Mauer, Stammesackerstrasse 93, 741 Reutlingen, both of Fed. Rep. of Germany

Filed Feb. 23, 1978, Ser. No. 880,570
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1977, 2710550
Int. Cl.[2] F16G *15/00*
U.S. Cl. 59—93 7 Claims

1. An attachment device for securing structural parts to a chain, in which two flanges are clamped across the two arms of a chain link by a bolt which penetrates through the link, the wings of the flanges clamping the arms of the link between them, the bolt also serving for attaching the structural part to the chain, characterized in that between the two flanges the bolt supports a replaceable centering piece which has end walls which are in contact with the curved ends of two adjacent chain links which engage with the chain link carrying the



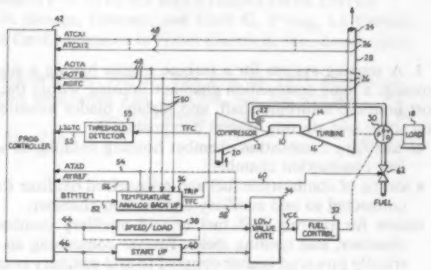
attachment device, the adjacent chain links being spaced apart by the centering piece.

4,161,101

CONTROL SYSTEM FOR AND METHOD OF ZERO ERROR AUTOMATIC CALIBRATION OF GAS TURBINE TEMPERATURE CONTROL PARAMETERS

Thane M. Drummond, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Sep. 9, 1976, Ser. No. 722,066
Int. Cl.[2] F02C *9/04*
U.S. Cl. 60—39.03 8 Claims



1. In a control system of the type including a controller for providing a fuel control signal to a gas turbine for controlling fuel flow thereto to control the temperature of said turbine, said fuel control signal having a value derived as a function of the average of the values of temperature signals provided to the controller from sensors in the turbine, the improvement in said control system comprising:

(a) means for specifying to said controller a reference having a value proportional to a desired turbine operating temperature;

(b) means in said controller for deriving a difference value proportional to the difference in magnitude between said reference and the value derived from the average of the temperature signals;

(c) means in said controller for developing a first adjustment value which varies at a rate specified by a vernier constant when said difference value exceeds a predetermined magnitude;

(d) means in said controller for developing a second adjustment value, said second adjustment value having a magnitude proportional to the difference in the value of a mid-value signal and the value derived from the average values of the temperature signals;

(e) means in said controller responsive to said first adjustment value and to said second adjustment value for developing a temperature trim signal proportional to the difference therebetween; and,

(f) means for providing said fuel control signal to said turbine including,

(1) means responsive to specified ones of the temperature

signals for generating said mid-value signal, said mid-value signal having a magnitude intermediate the individual values of the temperature signals provided by said specified ones, and

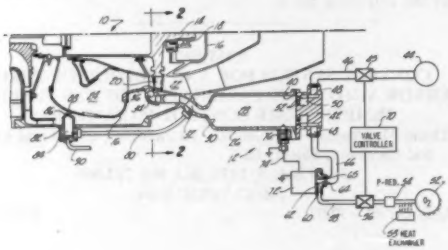
(2) means for combining said mid-value signal and said temperature trim signal to thereby provide said fuel control signal.

4,161,102

TURBINE ENGINE STARTING SYSTEM

Gytis B. Jasas, Toledo, Ohio; Richard L. Trauth, Lambertville, Mich., and Raymond Smith, Monclova, Ohio, assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Oct. 5, 1977, Ser. No. 839,624
Int. Cl.[2] F02C *7/26*
U.S. Cl. 60—39.14 M **7 Claims**



1. A starting system for a turbine engine having a support housing, a main combustion chamber housing within the support housing, a turbine shaft, and turbine blades mounted on said shaft, said starting system comprising:

an auxiliary combustion chamber housing defining an auxiliary combustion chamber,

a source of combustible fuel and pressurized oxidizer fluidly connected to said auxiliary combustion chamber,

means for igniting said fuel in said auxiliary combustion chamber, said igniting means further comprising an electrically powered igniter coupled to said auxiliary combustion chamber housing and adapted to ignite said combustible fuel in said auxiliary combustion chamber, and electrical energy generating means connected to said igniter, said electrical energy generating means comprising an electrical generator and a turbine connected to and adapted to rotatably drive said generator, said turbine being fluidly disposed in a fluid line connecting said oxidizer source to said combustion chamber, and

fluid passage means having one end open to said auxiliary combustion chamber and having its other end open to said turbine blades on said shaft whereby combustion gases flow from said auxiliary combustion chamber through said fluid passage means and impinge upon said turbine blades to thereby rotatably drive said turbine shaft.

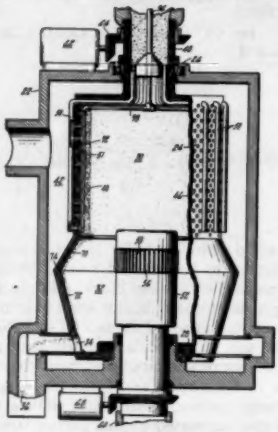
4,161,103

CENTRIFUGAL COMBUSTOR WITH FLUIDIZED BED AND CONSTRUCTION THEREOF

John J. Horgan, Wethersfield, and Francis H. Morrison, Enfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 15, 1977, Ser. No. 861,034
Int. Cl.[2] F02C *3/26*; F23D *19/00*
U.S. Cl. 60—39.35 **4 Claims**

1. A coal-fired combustor having a rotary drum supported vertically with respect to the earth's horizon, including a cylindrically shaped wall defining a combustion chamber, means for fluidizing the coal to form a fluidized coal bed adjacent the inner surface of said wall, said wall including louver-like elements extending vertically in said chamber attached to the adjacent louver-like element, each louver having a lip portion overlapping said next adjacent louver element, means for admitting coal internally of said wall through the outer surface of said louver element through openings formed in said louver element adjacent said lip so that said coal is admitted therein radially and is directed toward the axis of rotation of said



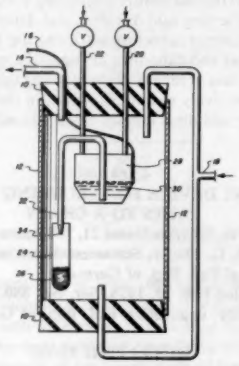
drum, air admitted internally through openings in said louver element flowing toward said axis of rotation fluidizing the bed, means communicating with said chamber for leading products of combustion out of said combustor and means for imparting rotary motion to said wall.

4,161,104

IGNITION OF HYDRAZINE-TYPE MONOPROPELLANTS

Michael Ladacki, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 16, 1968, Ser. No. 785,062
Int. Cl.[2] C06D *5/04*
U.S. Cl. 60—218 **10 Claims**

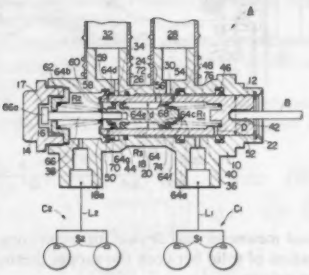


1. A process for producing gaseous hydrazine fuel reaction products comprising intimately contacting a hydrazine fuel with an ignition composition comprising silver nitrate and copper chromite and thereby igniting and decomposing said hydrazine fuel to produce said gaseous hydrazine fuel reaction products.

4,161,105
TANDEM MASTER CYLINDER

Yutaca Hagiwara, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Aug. 4, 1977, Ser. No. 821,813
Claims priority, application Japan, Aug. 9, 1976, 51/94624
Int. Cl.[2] B60T 11/06, 11/24
U.S. Cl. 60—561 1 Claim



1. In a tandem master cylinder for a split brake system including:

a housing having a main bore;

a primary piston slidably disposed in said main bore and having a secondary bore coaxial with said main bore;

a secondary piston slidably disposed in said secondary bore and cooperative with said secondary bore to form a first pressure chamber situated on one axial side of said secondary piston and also cooperative with said main bore and a part of said secondary bore to form a second pressure chamber situated on the other axial side of said secondary piston, said secondary piston being responsive to the pressure difference between said first and second pressure chambers and movable to reduce said pressure difference;

a spring disposed within said first pressure chamber for urging said secondary piston to a set position;

a return spring disposed within said second pressure chamber for urging said primary piston to a rest position;

first conduit means for selectively hydraulically connecting said first and second chambers to two independent hydraulic sources respectively in accordance with the position of said primary piston;

second conduit means for separately discharging therethrough the hydraulic pressures developed in said first and second pressure chambers; and

limiting means for limiting the movement of said secondary piston away from said set position thereof within a predetermined range;

the improvement comprising:

said secondary piston being in the form of a spool to have an annular recess intermediate between the axial ends thereof; and

said first conduit means including first and second passageway arrangements which respectively establish communication between said hydraulic sources and said first and second pressure chambers upon quick return of said primary piston to said rest position;

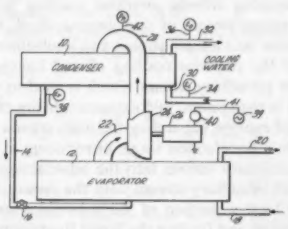
said first passageway arrangement including a first port inlet formed in said housing and constantly in hydraulic communication with one of said hydraulic sources, an annular chamber defined between said secondary bore and said annular recess formed in said secondary piston and constantly in hydraulic communication with said first port inlet, a plurality of apertures formed in said secondary piston for selectively providing communication between said annular chamber and said first pressure chamber, and an annular seal mounted on said secondary piston and operatively connected to said apertures, said annular seal being adapted to regulate selective communication from said annular chamber to said first pressure chamber through said apertures in response to the pressure difference between said annular chamber and said first pressure chamber; and

said second passageway arrangement including a second port inlet formed in said housing and constantly in hydraulic communication with the other of said hydraulic sources, a plurality of openings formed in said housing for selectively providing communication between said second port inlet and said second pressure chamber, and an annular seal mounted on said housing and operatively connected to said openings, said second named annular seal being adapted to regulate selective communication from said second port inlet to said second pressure chamber through said openings in response to the pressure difference between said second port inlet and said second pressure chamber.

4,161,106
APPARATUS AND METHOD FOR DETERMINING ENERGY WASTE IN REFRIGERATION UNITS

Robert H. Savage, Downey, and Cecil G. Young, La Canada, both of Calif., assignors to Water Chemists, Inc., Los Angeles, Calif.

Continuation of Ser. No. 772,439, Feb. 28, 1977, abandoned.
This application Jun. 22, 1978, Ser. No. 917,895
Int. Cl.[2] F25B 49/00
U.S. Cl. 62—115 7 Claims



1. In a refrigeration unit of the type having a condenser with a refrigerant fluid inlet and a refrigerant fluid outlet, an evaporator with refrigerant fluid inlet and a refrigerant fluid outlet, a compressor with a refrigerant fluid inlet and a refrigerant fluid outlet, the outlet of the condenser being in series fluid circuit with the inlet of the evaporator, the outlet of the evaporator being in series fluid circuit with the inlet of the compressor, and the outlet of the compressor being in series fluid circuit with the inlet of the condenser, motor means to drive the compressor, coolant fluid circuit means for cooling the refrigerant in the condenser, the coolant fluid circuit means having an inlet to the condenser and an outlet from the condenser, and refrigeration load circuit means for being cooled by refrigerant in the evaporator, an improvement to sense performance of the refrigeration unit comprising:

(a) means to sense the load on the compressor motor;

(b) means to determine an optimum value of the condenser head pressure within the condenser from the load sensed by the sensing means;

(c) means to sense the actual condenser head pressure; and

(d) means to compare the two head pressures to determine deviations from optimum performance.

4,161,107

METHOD OF PRODUCING SUPERCOLD TEMPERATURE IN CRYOGENIC SYSTEMS

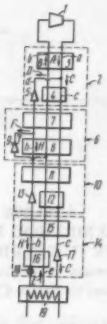
Sergei M. Korsakov-Bogatkov, 5 Parkovaya ulitsa, 56/6, kv. 74; Boris D. Krakovsky, Narodnaya ulitsa, 13, kv. 136; Vasily D. Nikitkin, Tsvetnoi bulvar, 25, kv. 95; Evgeny V. Onosovsky, ulitsa Z. i A. Kosmodemyanskikh, 8/7, kv. 131; Vladimir G. Pronko, B. Kozlovsky pereulok, 11, kv. 42; Leonid M. Stolper, Krasnobogatyrskaya ulitsa, 21, kv. 136, and Boris A. Chernyshev, Smolenskaya naberezhnaya, 2, kv. 16, all of Moscow, U.S.S.R.

Filed Mar. 1, 1977, Ser. No. 773,414

Claims priority, application U.S.S.R., Mar. 3, 1976, 2323651[I]

Int. Cl.[2] F25B *9/00*

U.S. Cl. 62—117 **2 Claims**



1. A method of producing supercold temperature in cryogenic systems comprising compressing a gaseous fluid constituting an incoming stream; stepwise cooling the incoming stream by a return stream of said gaseous fluid; splitting the incoming stream into a main stream and a subsidiary stream in the course of the stepwise cooling of said incoming stream; expanding the subsidiary stream which is used to compensate for the losses in the system, said expansion being effected with the removal of energy; expanding the main stream to effect its liquefaction in a liquefaction stage; introducing at least a portion of the subsidiary stream into the liquefaction stage after expanding said subsidiary stream with the removal of energy; liquefying at least a portion of the subsidiary stream in the liquefaction stage; and feeding the liquid fluid formed from the main and subsidiary streams to sustain a refrigerative load where the fluid is transformed into vapor constituting said return stream which is passed through the liquefaction stage and the cooling stages in the reverse direction.

4,161,108

METHOD AND APPARATUS FOR REDUCING THE TEMPERATURE OF A FLUID

Louis T. Cope, Grayson, Ga., assignor to H&T Enterprises, Inc., Grayson, Ga.

Division of Ser. No. 659,122, Feb. 18, 1976, Pat. No. 4,094,164. This application Nov. 25, 1977, Ser. No. 854,814

Int. Cl.[2] B01F *3/04*; F25C *1/18*; F25D *3/12*

U.S. Cl. 62—306 **12 Claims**

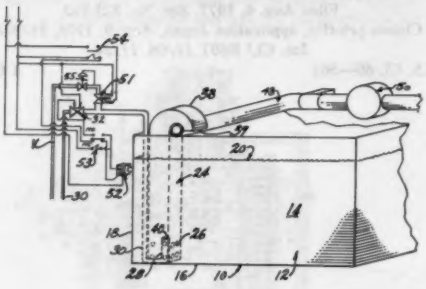
1. In a device for reducing the temperature of a fluid media and for circulating same:

(a) a container having the fluid media therein,

(b) gas releasing means for releasing a coolant gas below the level of said fluid media,

(c) a supply means on said container for supplying coolant gas to said gas releasing means whereby the gas is released and permitted to become a liberated volatile gas,

(d) gas directing means within said fluid media for directing said released gas within said fluid media and for directing said gas from said fluid media whereby the temperature of the fluid media is reduced,



(e) and means on said device for preventing accidental formation of solid between the supply means and gas releasing means.

4,161,109

LATCHGUARDS

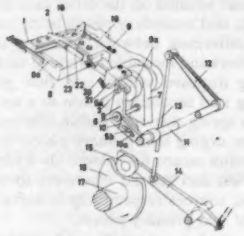
Eric Cross, Loughborough, England, assignor to William Cotton Limited, Leicestershire, England

Filed Aug. 24, 1978, Ser. No. 936,226

Claims priority, application United Kingdom, Sep. 15, 1977, 38581/77

Int. Cl.[2] D04B *11/04, 15/08*

U.S. Cl. 66—88 **4 Claims**



1. Rib needle bar assembly for a straight bar knitting machine including:

a rib needle bar; latch needles mounted on the rib needle bar having latches pivoted on stems, a latchguard member extending transversely across the stems and actuating means for moving the latchguard member relative to the needle bar between a first position extending across the needle latches in an open needle attitude to hold the latches open with sufficient clearance to allow old loops to clear the latches and a second position extending across the stems clear of the latches in the open needle attitude to permit closing of the latches by landing the old loops on the latches.

4,161,110

AUTOMATIC CONTROL DEVICE FOR A BENDING MACHINE

Klaus Ritter; Gerhard Ritter; Josef Ritter; Josef Pöhacker, all of Graz, and Gert Jahrbacher, Peggau, all of Austria, assignors to EVG Entwicklungs- und Verwertungs-Gesellschaft mbH., Graz, Austria

Filed Apr. 28, 1977, Ser. No. 791,844

Int. Cl.[2] B21D *9/07*; B21F *45/00*; B21D *7/024, 7/12*

U.S. Cl. 72—7 **7 Claims**

1. An automatic bending machine for producing different

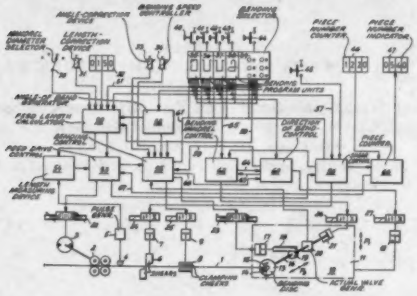
types of loops in a trial-run free manner from a continuous wire comprising, in combination:

a feeding station including means for guiding said rod along a feeding path, and wire shearing means;

a bending unit including a mandrel and a bending tool angularly displaceable about an axis of rotation in opposite directions in said feeding path, displaceable in a direction perpendicular to said axis of rotation, and axially displaceable from said feeding path;

a power drive circuit including a plurality of reversible power drive units and switching units for actuating said feeding station and said bending unit; and

a programmable control device including a plurality of program units, each having a basic fixed program determining the direction of bending and the magnitude of angles of successive bends for different types of the loop to be produced, a loop-type preselector for activating a selected one of said program units, a length-of-sides selector programmable for determining the length of successive sides of the selected loop, data processing means for comparing actual values measured on the loop in process with programmed values and for producing a succession of control signals applied to said power drive circuit to control the direction of travel and shearing of said wire by said shearing means in said feeding station, and the angular and axial displacements and change of direction of rotation of said mandrel and bending tool in said bending unit in accordance with the selected program and in response to the measured actual value.



4,161,111

HYDROSTATICALLY EXTRUDED THERMOELECTRIC LEGS

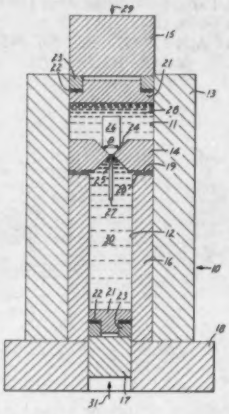
Edward F. Hampl, Jr., Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 804,590, Jun. 8, 1977, abandoned, which is a continuation of Ser. No. 712,680, Aug. 9, 1976, abandoned, which is a continuation of Ser. No. 406,326, Oct. 15, 1973, abandoned, which is a continuation of Ser. No. 156,194, Jun. 24, 1971, abandoned. This application Feb. 10, 1978, Ser. No. 876,745

Int. Cl.[2] B21D *22/10*

U.S. Cl. 72—60 **10 Claims**

1. A method for preparing thermoelectric legs comprising extruding a billet of thermoelectrically useful material that includes current carriers distributed in the material in an amount that is critical to the thermoelectric utility of the material, the billet being extruded through an orifice in a die by the pressure of a liquid that surrounds the billet except at the forward end of the billet engaged against the die, said material having a higher Seebeck coefficient after extrusion than it had before extrusion.



4,161,112

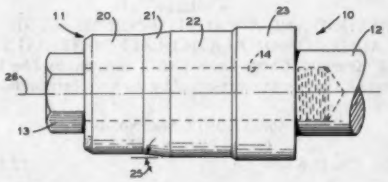
TUBE DRAWING TECHNIQUE

Paul E. Stump, Beaver Falls, Pa., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Feb. 21, 1978, Ser. No. 879,285

Int. Cl.[2] B21C *3/16*

U.S. Cl. 72—283 **6 Claims**

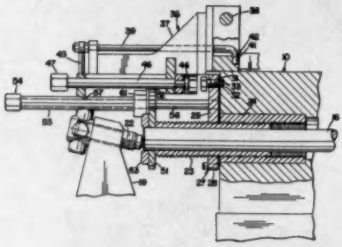


1. A method of tube drawing to produce a cold finished stepped internal diameter tube, which comprises: positioning within an opening of a die a tube hollow consisting essentially of a section having a uniform outer and stepped inner diameters greater than the outer and inner diameters of the finished tube; positioning within the tube hollow a mandrel including a mandrel plug and a mandrel rod connected to the mandrel plug, the mandrel plug having a first cylindrical working surface, a second larger diameter cylindrical working surface and plug means for automatically positioning the first cylindrical working surface and the second cylindrical working surface within the die opening; and causing relative movement of the tube hollow with respect to the die, in one draw pass, with the plug means automatically positioning the first cylindrical working surface to reduce the wall of a first portion of the tube hollow section and with the plug means further automatically positioning the second cylindrical working surface to reduce the wall of a second portion of the tube hollow section such that the outer diameter is uniformly reduced and the inner diameters are successively reduced.

4,161,113
KNOCKOUT ADJUSTMENT MECHANISM FOR FORGING MACHINES

Gaylen O. Kline, Tiffin, Ohio, assignor to The National Machinery Company, Tiffin, Ohio

Filed Apr. 11, 1978, Ser. No. 895,363
Int. Cl.[2] B21D *45/00*
U.S. Cl. 72—344 17 Claims

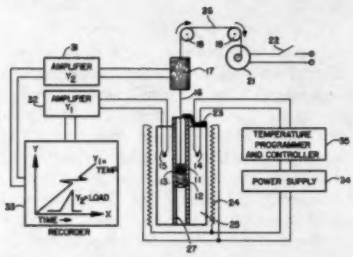


1. A forging machine comprising a frame, a die on said frame in which blanks are shaped by a tool movable on said frame, and an adjustable knockout assembly on said frame, said knockout assembly including a knockout pin slidable in said frame between a first position occupied during the forming of blanks in said die and an operative position to which it moves to eject a blank from said die, knockout pin stop means threaded into said frame for axial adjustment with the position of said stop means adjustably determining said first position of said knockout pin, said stop means providing a driven gear portion, a drive gear engageable with said driven gear journaled for rotation to cause adjusting rotation of said stop means and movable axially with said stop means as said stop means is axially adjusted, the position of said drive and driven gears providing a visual indication of said first position of said knockout pin during adjustment of said stop means.

4,161,114
METHOD AND APPARATUS FOR MEASURING ADHESION OF PARTICULATE MATERIALS

Karl J. Kraeutle, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 17, 1978, Ser. No. 897,237
Int. Cl.[2] G01N *25/00*
U.S. Cl. 73—15.6 13 Claims



1. A method for measuring adhesion of particulate material comprising the steps of:

filling a container to a first predetermined level with said particulate material;

packing said particulate material in said container to a first predetermined density;

resting a geometric object upon said packed particulate material in said container;

adding more particulate material to said container to a second predetermined level;

compacting said more particulate material to a second predetermined density;

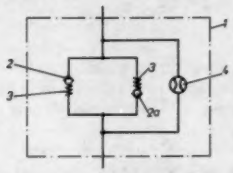
pulling the geometric object from said sample of particulate material by measurable force means; and

measuring the force required to pull said geometric object from said sample of particulate material.

4,161,115
APPARATUS FOR MONITORING HYDRAULIC PLANT FOR LEAKAGES

Jakob Wetter, Düsseldorf, Fed. Rep. of Germany, assignor to Sack GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Nov. 21, 1977, Ser. No. 853,588
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1976, 2653020
Int. Cl.[2] G01M *3/08*
U.S. Cl. 73—40.5 R 3 Claims



1. Apparatus for detecting leakages in hydraulic equipment, said apparatus being insertable into a conduit for supplying fluid under pressure to said hydraulic equipment and being arranged to detect leakage flows in either direction through said conduit, and including:

(a) an inlet;

(b) an outlet;

(c) first and second conduit means connected and arranged to define alternate flow paths for pressurized fluid between said inlet and said outlet;

(d) first and second pre-loaded one-way valve means connected in said first and said second conduit means, respectively, and arranged oppositely to each other so that each of said first and said second conduit means will accommodate flow in only one direction therethrough, the preload on said valve means being such that as pressure rises in either direction no fluid will flow until a threshold point is reached;

(e) third conduit means located between said inlet and said outlet and connected to form a by-pass flow path around said first and said second conduit means; and

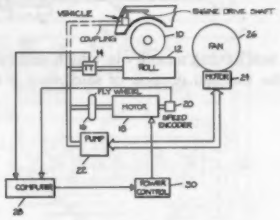
(f) a restricted flow monitor connected in said third conduit means, constructed and arranged to detect fluid leakages in both directions of fluid flow through said apparatus, the flow through said third conduit and said monitor being such that as pressure rises the fluid flow will increase until the capacity of said third conduit and said monitor is reached;

(g) whereby the apparatus will provide fluid flow at an increasing rate in either direction through said third conduit and said monitor as the pressure increases until the pressure increases to the point that one of said valves opens.

4,161,116
INERTIA AND ROAD LOAD SIMULATION FOR VEHICLE TESTING

Clark E. Fegraus, and Severino D'Angelo, both of Laguna Beach, Calif., assignors to Automotive Environmental Systems, Inc., Westminster, Calif.

Continuation of Ser. No. 718,917, Aug. 30, 1976, abandoned.
This application Sep. 21, 1977, Ser. No. 835,225
Int. Cl.[2] G01M *17/00*; G01L *3/22*
U.S. Cl. 73—117 **42 Claims**



12. A method for simulating the inertia of and road load torque to a vehicle undergoing testing, comprising the steps:

permitting a vehicle wheel to exert torque on a roll;

measuring the torque exerted by the vehicle wheel;

computing the vehicle wheel speed as a function of measured torque, road load torque and preselected simulated inertia;

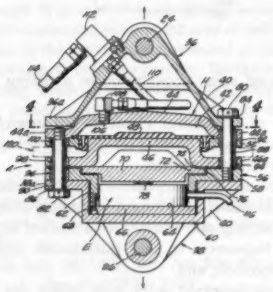
exerting torque on the roll to resist wheel speed changes initiated by the vehicle, the resisting torque being proportional to the preselected simulated inertia; and

measuring the actual speed of the vehicle wheel, and comparing the actual vehicle wheel speed value with the computed wheel speed value and generating a resultant error signal to correct the exerting torque toward achieving a zero error signal.

4,161,117
HYDRAULIC-ELECTRONIC LOAD SENSING DEVICE FOR LOAD INDICATING APPARATUS

Elmer L. Decker, Long Beach, and James Moon, Santa Ana, both of Calif., assignors to Decker Engineering Corporation, Long Beach, Calif.

Filed Dec. 5, 1977, Ser. No. 857,583
Int. Cl.[2] G01L *1/26*
U.S. Cl. 73—141 R **9 Claims**



1. A load sensing device for load indicating means having a pair of spaced members supported for separating movement under applied tension load forces, comprising:

(a) a pair of force applying elements respectively connectable with said spaced members;

(b) a pair of load cells, one of the hydraulic type and the other of the electronic type, mechanically interconnected in series operative relationship between said force applying elements and being operatively responsive to compression load forces;

(c) the hydraulic load cell comprising first and second opposed members interconnected by a diaphragm for relative movement and coacting to form a variable pressure hydraulic chamber adapted to contain a liquid, said first of the opposed members being positioned adjacent one of the force applying elements;

(d) a third member spaced from said second member and being positioned adjacent the other of said force applying elements;

(e) the electronic load cell having a load plunger and being positioned with one end connected with said third member;

(f) a force transmitting member interposed between said plunger and said second member;

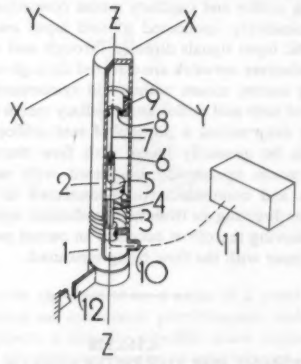
(g) means interconnecting said force applying elements respectively with said first and third members so that upon movement of said force applying elements away from each other under tension load forces, said first and third members will be moved towards each other to apply concomitant compression load forces to said hydraulic load cell and said electronic load cell;

(h) said interconnecting means comprising tie members connecting said one force applying member with said third member and said other force applying member with said first member, and said second member having sliding guided relation with respect to said tie members.

4,161,118
FORCE DIRECTION TRANSDUCER

Thomas J. Banwell, Claremont, and Thomas C. Banwell, both of 885 Atlanta Ct., Claremont, Calif. 91711

Filed Dec. 12, 1977, Ser. No. 859,605
Int. Cl.[2] G01F *1/28*
U.S. Cl. 73—188 **1 Claim**



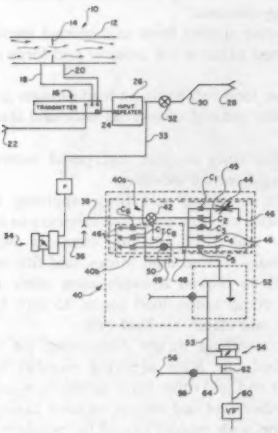
1. In apparatus of the character described for determining the direction of a force or forces resulting from two-dimensional hydrodynamic flow, the combination of a toroidal electrical resistance element and a thin electrical contact wire, a top section and a bottom section comprising surfaces of revolution, said sections placed in the path of flow at a fixed point, said sections flexibly coupled and having coincident axes of revolution, means disposed within the sections for mounting an electrically insulated contact wire and toroidal electrical resistor so that the slight tilting due to the applied force against the top section causes the said wire to make electrical contact against the inner side of said resistor which provides, by means of an electrical manipulating circuit, an electrical signal which is commensurate to the direction of the applied forces.

4,161,119

PNEUMATIC FLOW MEASURING SYSTEM

Robert O. Brandt, Jr., Garner, N.C., assignor to Brandt Industries, Inc., Fuquay-Varina, N.C.

Filed Mar. 6, 1978, Ser. No. 883,537
Int. Cl.[2] G01F *1/42*; G06G *5/00*
U.S. Cl. 73—205 R **13 Claims**



1. A pneumatic instrument for measuring flow and effectively extracting the square root of a pneumatic input signal, comprising: input means for directing a pneumatic input signal to said instrument; a synthesizer network forming a part of said instrument and communicatively connected to said input means for directing a pneumatic input signal to said instrument such that pneumatic input signals to said instrument are directed to said synthesizer network; said synthesizer network including orifice and capillary means connected in series and communicatively connected to said input means such that pneumatic input signals directed through said input means to said synthesizer network are directed through said orifice and capillary means; means within said synthesizer network and associated with said orifice and capillary means for causing the pressure drop across a portion of said orifice and capillary means to be generally linear with flow therethrough; and output means operatively associated with said synthesizer network and communicatively connected to said capillary means for directing air from said synthesizer network such that the air moving therefrom becomes an output pneumatic signal that is linear with the flow being measured.

4,161,120

EQUIPMENT FOR THE DETECTION OF ROTATION PARAMETERS IN PARTICULAR FOR A WHEEL-VELOCITY SENSOR

Jean-Claude Cloarec, Livry Gargan, France, assignor to WABCO Westinghouse, Freinville-Sevran, France

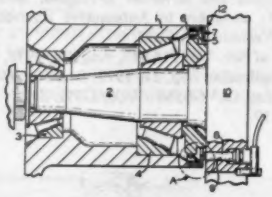
Filed May 8, 1978, Ser. No. 903,624
Int. Cl.[2] G01P *3/48, 1/00*
U.S. Cl. 73—494 **5 Claims**

1. For use with a vehicle wheel having a hub rotatably mounted on a spindle by bearing means and a bearing seal mounted in a bore of said hub, a wheel sensor device comprising:

(a) a rotor with teeth on the periphery thereof;

(b) a stator having a detecting head in proximity of said rotor teeth; and

(c) an integrated assembly including said rotor and said bearing seal mounted in said bore of said rotor for rotation therewith; wherein the improvement comprises,



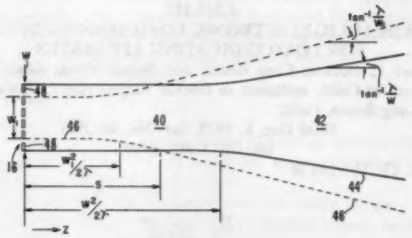
(d) said seal having a cavity in which said rotor is housed so that the toothed portion of said rotor is encased by said seal.

4,161,121

ULTRASONIC IMAGING SYSTEM

Louis T. Zitelli, Palo Alto, and William L. Beaver, Los Altos Hills, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 673,775, Apr. 5, 1976, abandoned. This application Jul. 20, 1977, Ser. No. 817,394
Int. Cl.[2] G01N *29/00*
U.S. Cl. 73—626 **20 Claims**



1. A phased array acoustic beam scanning apparatus comprising:

an array of transducer elements for interchanging energy with an acoustic beam, said elements being spaced side-by-side in a first direction;

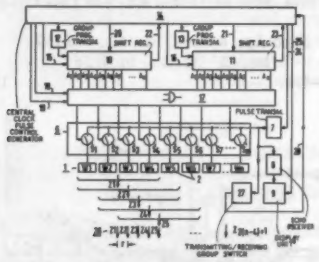
means for applying repetitive electric pulses to form said acoustic beam, said means including delay circuit means for sweeping said beam over a desired angular range in a plane transverse to said transducers and including said first direction; and

means synchronized with said pulses for activating said elements to receive reflections of said beam and convert same to analogous electrical signals, said means de-energizing at least a symmetric outer pair of elements of said array to reduce the extent of the active elements of said array during the time period in which near field reflected acoustic information arrives at said array, whereby an effectively smaller array is presented during detection of said near field reflected information.

4,161,122
APPARATUS FOR EXAMINING BODIES THROUGH SCANNING BY MEANS OF ULTRASOUND

Klaus Buchner, Uttenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 919,826
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1977, 2733920
Int. Cl.[2] G01N *29/04*
U.S. Cl. 73—626 **8 Claims**



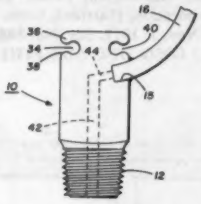
1. Apparatus for examining bodies through scanning by means of ultrasound comprising an ultrasonic applicator comprising at least one row of adjacently arranged ultrasonic transducer elements and an actuating system for group-actuation of the transducer elements, whereby the actuating system for actuating the transducer elements of the ultrasonic applicator is constructed in such symmetrical configurations with an even-numbered and odd-numbered count of transducer elements that the symmetry axes of the configurations of simultaneously energized transducer elements, at one time, become placed in the gaps between the adjacent transducer elements, and, another time, in the centers of the transducer elements, whereby the actuation proceeds in such a manner that, during a scan cycle over the entire length of the applicator, the symmetry axes occupy, at least once, every possible position in the gaps between two transducer elements, or in the centers of the transducer elements, respectively, with the possible exception of only the transducer elements of the first half of the first, and the second half of the last transducer element group of the applicator, characterized in that, the actuating system (**6**; **10** through **25**; **27**, **28**), in an interlaced transmitting/receiving clock pulse sequence activates groups with an even-numbered and groups with an odd-numbered count of transducer elements (W1 through Wn) in a chronologically interlaced fashion such that each connected even-numbered or odd-numbered group, in relation to the previously connected group, in a first clock pulse interval, acts first as a receiver for the echo signals of the transmitting beam of the preceding group, and in a following clock pulse interval, is switched over to transmission.

4,161,123
PRESSURE GAUGE CONSTRUCTION

David M. Carpenter, Berea, Ky., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 25, 1978, Ser. No. 936,972
Int. Cl.[2] G01L *7/04*
U.S. Cl. 73—741 **10 Claims**

6. In a pressure gauge comprising a dial plate having pressure graduations thereon, a pointer, a Bourdon tube operatively sensitive to pressure changes for effecting correlative displacement of said pointer about the graduations on said dial plate, an outer enclosure casing and a socket extending through said casing for communicating fluid pressure to be measured from a source to the inlet of said Bourdon tube, the improvement in which said socket comprises an extruded metal formation including a first as-extruded slot in which to receive the open inlet end of said Bourdon tube and at least one

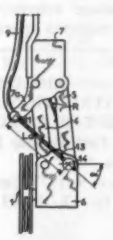


second as-extruded slot for receipt of a self-tapping screw by which said casing can be secured to said socket.

4,161,124
APPARATUS FOR THE CONTROL BY A CABLE OF SPEED CHANGE DEVICES OF ARTICULATED PARALLELOGRAM TYPE FOR BICYCLES AND SIMILAR VEHICLES

Lucien C. H. Juy, deceased, late of Dijon, France (by Henri Juy, heir), assignor to Le Simplex, Dijon, France

Filed Mar. 24, 1977, Ser. No. 780,993
Claims priority, application France, Mar. 24, 1976, 76 09406
Int. Cl.[2] F16H *7/10, 9/00, 11/08*
U.S. Cl. 74—217 B **11 Claims**



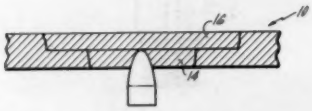
1. Apparatus for the control by a cable of a speed change device comprising an articulated parallelogram including a fixed upper support, a laterally movable lower support, two parallel levers pivotably connected to said support, a chain guide secured to said lower support and laterally movable therewith for derailing a chain on pinions of a free wheel cluster, elastic means acting on the parallelogram to deform the same in one direction, the cable acting on the parallelogram to deform the same in the other direction against the action of the elastic means, means securing said cable to said parallelogram at first and second spaced locations such that application of external force to said cable produces deformation of said parallelogram, and projection means on said parallelogram, carrying said means for securing said cable at said first location, said projection means offsetting said first location both laterally in the direction of the free wheel cluster and vertically in the direction of the lower support to reduce the angle of the cable connected at said first and second locations with respect to the direction of lateral movement of the chain guide.

4,161,125

AIRCRAFT CONTROL SYSTEM COMPONENT WITH IMPROVED BALLISTIC TOLERANCE

William G. Degnan, Huntington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 7, 1977, Ser. No. 848,953
Int. Cl.[2] G05G *1/04, 7/00;* F41H *5/04*
U.S. Cl. 74—469 25 Claims



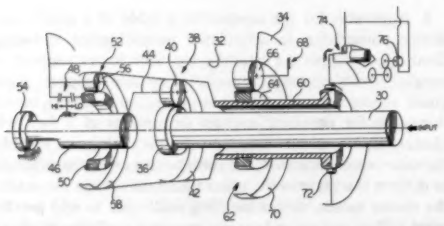
14. An aircraft flight control system comprising:
(A) pilot actuated control input means,
(B) controlled means remote from said input means,
(C) means connecting said input means to said control means so that said input means is effectively interconnected to said controlled means to control same and including:
(1) a plurality of interlinked and coacting parts adapted to cooperate with and move relative to associated parts in performing the control function and having at least one component comprising:
(a) a first sideplate member,
(b) a second sideplate member,
(c) a spacer member positioned between and joined to said sideplate members to selectively space said side plate members, and
(d) each of said sideplate members comprising three bonded laminates with the central laminate twice the thickness of the other laminates and with the outboard laminate of selected thickness and yield strength that the petals formed therein by a projectile impacting and passing therethrough are reasonably deformable by interference with associated parts following such ballistic damage so as to improve the ballistic damage tolerance of the component and permit its continued operation.

4,161,126

WINCH CONSTRUCTION HAVING AXIALLY SHIFTABLE FACE GEAR

James E. Winzeler, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 9, 1977, Ser. No. 767,085
Int. Cl.[2] F16H *37/06*
U.S. Cl. 74—674 19 Claims



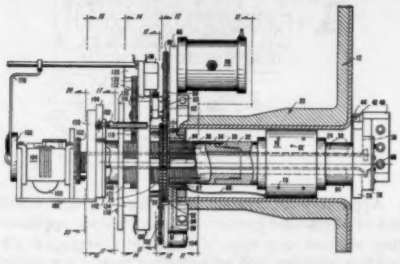
1. A winch construction comprising:
a winch drum journalled for rotation and having a hollow hub;
a motor having a rotary output for driving said drum;
a transmission comprising at least two planetary gear sets disposed within said hollow hub for coupling said motor and said drum; and
means for selectively coupling said planetary gear sets to said motor and said drum in at least two different gear ratios;
one of said planetary gear sets being coupled to said motor and the other of said planetary gear sets being coupled to said drum, and said selective coupling means comprising means for alternately serially coupling said sets together and for coupling said one planetary gear set directly to said drum.

4,161,127

REMOTELY OPERABLE PORTABLE BORING TOOL

Patrick L. Tiffin, 3030 McMillan Rd., San Luis Obispo, Calif. 93401

Filed Apr. 8, 1977, Ser. No. 786,119
Int. Cl.[2] B23B *5/36, 3/26*
U.S. Cl. 82—1.4 18 Claims



1. A boring bar apparatus for removing material from the interior of a rigid structure through a cylindrical opening therein, comprising:
a bar projecting into said cylindrical opening and mountable therein for rotation about the axis of that opening;
a cutting head adjustably mounted to said bar for rotation therewith, said cutting head holding a cutting element adapted to remove material located within the essentially circular path defined by said element as said bar rotates;
means for altering the radial position of said cutting cutting head relative to said bar as said bar rotates; and
means for altering the axial position of said cutting head relative to said opening as said bar rotates including a pair of radially oriented gears on said bar, one of said gears being a main drive gear keyed to said bar in a manner allowing it to slide axially therealong as it imparts rotational movement to that bar and the other of said gears being threaded thereon and clamped to said rigid structure to locate it axially relative to said structure, and a gear transmission engaging said gears to control the axial movement of said bar and hence said cutting head by controlling the rotational speed of said threaded gear relative to said main drive gear.

5. A boring bar apparatus for removing material from the interior of a rigid structure through a cylindrical opening therein, comprising:
a bar projecting into said cylindrical opening and mountable therein for rotation about the axis of that opening, said bar having an outer axially threaded surface portion;
a cutting head adjustably mounted to said bar for rotation therewith, said cutting head holding a cutting element adapted to remove material located within the essentially circular path defined by said element as said bar rotates;
means for altering the radial position of said cutting head relative to said bar as said bar rotates comprising a rack and pinion mechanism including a rack carried by said cutting head and a pinion engageable therewith which is carried by and rotatable relative to said bar such that rotational movement of said pinion relative to said bar causes a corresponding radial movement of said cutting head, an axially directed shaft carried rotatably within said bar and connected at one end to said pinion for im-

parting rotational movement thereto, and a radial drive assembly carried by said bar for rotation therewith and operably connected to said shaft for imparting relative rotational movement thereto; and

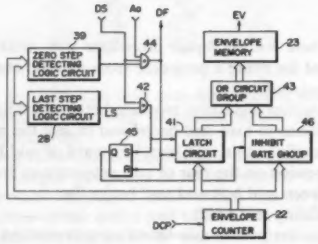
means for altering the axial position of said cutting head relative to said opening as said bar rotates, including a radially oriented axial drive gear held against axial movement relative to said structure and having a threaded opening extending axially therethrough to engage said outer axially threaded surface portion of said bar, and gear transmission means operatively engaged with said axial drive gear and said bar for controlling the rotational speed of said nut relative to that of said bar to control the axial movement of said bar and hence said cutting head;

said means for altering the radial and axial positions of said cutting head being mutually independent in their operation and actuable from outside said opening.

4,161,128
ELECTRONIC MUSICAL INSTRUMENT

Shigeru Yamada, and Eiichiro Aoki, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 9, 1977, Ser. No. 859,042
Claims priority, application Japan, Dec. 13, 1976, 51-149945
Int. Cl.[2] G10H *1/02*
U.S. Cl. 84—1.26 **7 Claims**



1. An electronic musical instrument having circuitry in which an envelope waveform varying stepwise is generated and utilized to modulate the amplitude of a musical tone waveform signal, which comprises:

(a) detecting means, responsive to the phase of said musical tone waveform signal, for detecting when the amplitude of said tone waveform signal becomes a zero level; and

(b) control means, cooperating with said detecting means and said circuitry, for bringing the amplitude of said stepwise generated envelope waveform to a zero level, and thereby ending generation of said envelope waveform, in synchronization with said tone waveform signal becoming a zero level as detecting by said detecting means.

4,161,129
MODIFIED PIANO STRIKING MECHANISM

Jorge L. Carbone, 1544 Gottschall Rd., Stow, Ohio 44224

Continuation-in-part of Ser. No. 581,026, May 27, 1975, Pat. No. 4,061,067. This application Dec. 5, 1977, Ser. No. 857,507
Int. Cl.[2] G10C *3/16*
U.S. Cl. 84—253 **9 Claims**

1. A striking mechanism for use in pianos and related instruments having at least one string to produce a musical note and at least one key to select the musical note comprising:

an escapement action actuated by said key;

at least one hammer assembly for striking a string including:

a hammer head;

a foot engageable with said escapement action; and,

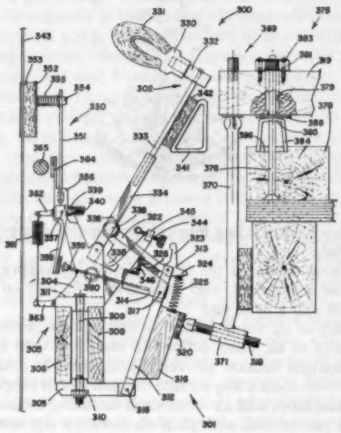
a hammer shank carrying said hammer head and said foot at opposite ends;

means for supporting said hammer assembly and said escapement action;

wherein said escapement action includes:

an action arm;

a jack carried by said arm and engageable with said hammer shank; and,

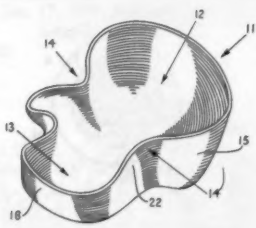


a damping block carried by said arm below said jack and communicable with said foot while the key is totally depressed and partially released and free from said foot when the key is totally released and communicable with said jack when the key is totally released and free of said jack while the key is totally depressed.

4,161,130
BODY FOR BASS GUITAR

Thomas G. Lieber, 9 E. Valley Stream Blvd., Valley Stream, N.Y. 11580

Filed Nov. 23, 1977, Ser. No. 854,273
Int. Cl.[2] G01D *1/08*
U.S. Cl. 84—267 **1 Claim**



1. In a bass guitar, the improvement comprising a single piece bowl-shaped body constructed of graphite in a continuous layer of substantially uniform thickness, the body having a waist portion separating a smaller upper bowl portion from a larger lower bowl portion, the lower bowl portion having a circular bout and substantially greater depth than the upper bowl portion, with the sides of the body being perpendicular to the top along the front side and the waist area of the bass side, and with all other surfaces curving downwardly to meet the bottom in a continuously smooth surface.

4,161,131

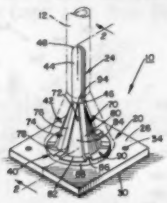
MUSICAL INSTRUMENT SUPPORTING STAND

Herbert S. Blayman, 195 Jefferson Ave., Tenafly, N.J. 07670

Filed Nov. 8, 1977, Ser. No. 849,558

Int. Cl.[2] G10D *9/00*; G10G *5/00*

U.S. Cl. 84—453 **10 Claims**



1. A device for holding musical instruments comprising:

a pedestal;

a stanchion mounted on said pedestal for supporting the musical instrument, said stanchion including an upright section and a base; and

a plurality of air vents defined in said upright section and a plurality of air vents defined in said base with said base and upright section air vents being fluidly coupled together for conducting air into the instrument supported on the stanchion, said air vents each including a base surface and a pair of ribs, with each rib having a top surface and an edge surface intersecting said base surface so that said top surfaces are spaced from said base surface to define a channel, through which air passes, said air retarding moisture condensation in the instrument, the instrument contacting said rib top surfaces to be supported thereon with a bypass means being defined in said channels through which air moves into the instrument past the point of contact between the instrument and said stanchion when that instrument is supported on said stanchion.

4,161,132

SELF-TAPPING SCREW

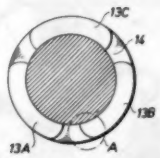
Ingvar A. Eklund, Hallstahammar, and Sixten H. Lejdegard, Ramnas, both of Sweden, assignors to Bulten-Kanthal Aktiebolog, Hallstahammar, Sweden

Continuation of Ser. No. 692,738, Jun. 4, 1976, abandoned. This application Dec. 6, 1977, Ser. No. 858,042

Claims priority, application Sweden, Jun. 5, 1975, 7506443

Int. Cl.[2] F16B *25/00, 33/02*

U.S. Cl. 85—47 **3 Claims**



1. A self-tapping screw for use in pulverable materials consisting of bricks, concrete and rock, comprising:

(a) a core having a single cylindrical surface of uniform diameter with a head at one end and a tip at the opposite end, said head having a planar annular surface merging smoothly with said cylindrical surface; and

(b) a helical screw thread projecting radially from said cylindrical surface said thread comprising a plurality of circumferentially successive thread portions per revolution, each portion extending circumferentially at least 90 degrees and having a full radial height for a majority of such extent, between which portions there are voids of several degrees flush with said cylindrical surface, the leading and trailing ends of each of said thread portions respectively beginning substantially radially and convexly at said cylindrical surface, and being smoothly rounded into the apex of said screw thread portion, portions of said single cylindrical surface surrounding each of said thread portions individually.

4,161,133

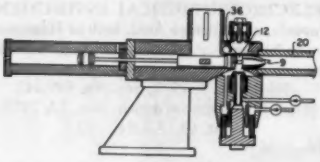
LIQUID PROPELLANT GUN

William L. Black, China Lake; Robert A. Gould, Ridgecrest, and Stanley E. Wood, Inyokern, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 774,366, Mar. 4, 1977, abandoned. This application Jul. 3, 1978, Ser. No. 921,527

Int. Cl.[2] F41F *1/04*

U.S. Cl. 89—7 **12 Claims**



1. A bulk loaded liquid propellant gun utilizing a liquid propellant for firing a projectile from a barrel comprising:

an elongated barrel;

a bolt within said barrel movable between loading and firing positions to load said barrel and to seal the rear thereof;

a projectile within said barrel forward of said bolt;

a depression on the rear of said projectile to provide a void between said bolt and said projectile;

a gas filling said void;

an injection port in said barrel communicating to said void while said bolt is in loading position and sealed by said bolt while in firing position;

ignition means in said barrel between said bolt and said projectile while said bolt is in firing position to ignite said liquid propellant; and

compression means to place said liquid propellant and said gas at a pressure greater than atmospheric pressure.

4,161,134

FLUID PRESSURE CIRCUIT FOR PERIODIC OPERATION OF FLUID PRESSURE OPERABLE DRIVE MEANS

Udo Stossberg, Gehrden; Josef Frania, Hanover; Hans F. Meyer, Gehrden, and Alfrons Kneuttinger, Munich, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse GmbH, Hanover, Fed. Rep. of Germany

Filed Aug. 1, 1977, Ser. No. 820,511

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1976, 2652902

Int. Cl.[2] F01L *25/06, 31/00*

U.S. Cl. 91—219 **4 Claims**

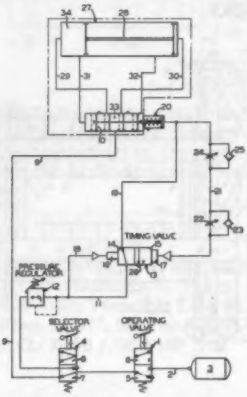
1. A fluid pressure control circuit for controlling operation of reciprocable motor means, such as a windshield wiper motor having double-acting piston means operable responsively to supply and release, alternately, of fluid pressure for effecting reciprocal operation of said operating piston means, said control circuit comprising:

(a) a source of fluid under pressure;

(b) stop cylinder means operably connected to said control valve means and effective, when subjected to fluid pressure, for holding said control valve means in a stationary

position until relieved of said fluid pressure acting thereon;

(c) timing valve means including opposingly arranged actuating pistons having different pressure areas, a smaller of which is constantly subjected to actuating fluid pressure for biasing the timing valve means toward a supply position, in which said stop cylinder means is subjected to fluid pressure, and a larger of said pressure areas being alternately subjected to and relieved of actuating pressure for effecting alternate operation of said timing valve means between said supply position and a pressure release



position in which said stop cylinder means is relieved of fluid pressure, according to predetermined rhythmical time intervals; and

(d) throttling valve means comprising a pair of pre-set flow capacity chokes interposed in serial relation with each other between said stop cylinder means and the larger of said pressure areas, and a pair of one-way check valves arranged in parallel relation with said chokes, respectively, with the direction of flow of one of said check valves being toward said larger pressure areas and the direction of flow of the other check valve being opposite to said one.

4,161,135

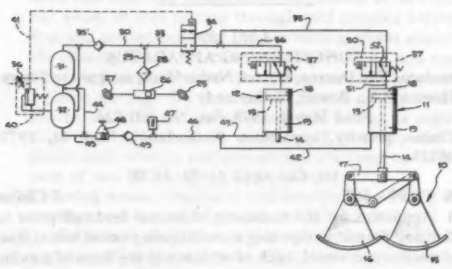
FAIL SAFE FLUID POWER DEVICE

Roland E. Garlinghouse, 2415 E. Washington Blvd., Los Angeles, Calif. 90021

Continuation-in-part of Ser. No. 628,154, Nov. 3, 1975, abandoned, and a continuation of Ser. No. 776,101, Mar. 10, 1977, abandoned. This application Feb. 13, 1978, Ser. No. 876,991

Int. Cl.[2] F15B *15/17, 11/16*

U.S. Cl. 91—417 R **9 Claims**



1. In a system for performing work by operation of a gas actuated ram comprising a cylinder and a piston therein forming in said cylinder a forward chamber and a reverse chamber wherein said reverse chamber has a reverse exhaust means at a pressure exceeding ambient pressure, and wherein said piston is movable between full forward and reverse positions, said system comprising an outside pressure connection adapted to provide a source of gas at forward operating pressure and an exhaust, a gas storage container means of capacity at least equal to the capacity of the reverse chamber with the piston at said full reverse position, said container means including a first gas passage means forming a connection between said container means and said outside pressure connection, operating valve means including a pressure diverting portion and a pressure exchange portion, gas passage means interconnecting said operating valve means with said outside pressure connection and said container means, said operating valve means having one adjustment wherein said pressure diverting portion is in a position blocking gas under pressure from said outside pressure connection to said forward chamber, sequence valve means interconnected with said container means and with said operating valve means, said sequence valve means having a first automatic adjustment at pressures less than said forward operating pressure operative to set said operating valve means at said one adjustment whereby to inhibit passage of gas by said operating valve means to said forward chamber, said sequence valve means having a second automatic adjustment when said container means is at said forward operating pressure, said operating valve means having another adjustment in response to said second automatic adjustment of the sequence valve means wherein said pressure exchange portion is part of an interconnection from said forward chamber through said outside pressure connection to said source and wherein said reverse chamber has a connection to said reverse exhaust means, at least a part of said operating valve means upon disconnection of said source from said outside pressure connection serving as an exhaust passage from said forward chamber, a reverse gas connection between said container means and said reverse chamber, said reverse gas connection being operative to pass gas under pressure to said reverse chamber whereby to reverse action of said ram when at least said part of said operating valve means is serving as an exhaust passage.

4,161,136

HYDRAULIC JACK CONTROL DEVICE

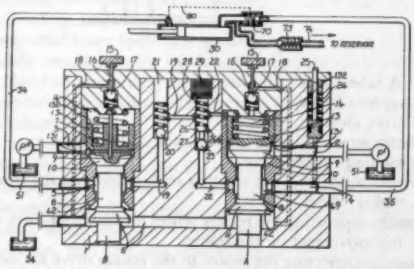
Karl Krieger, Wuppertal, Fed. Rep. of Germany, assignor to Maschinenfabrik GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Nov. 11, 1977, Ser. No. 850,560

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1976, 2651913; Jan. 17, 1977, 2701668; Mar. 11, 1977, 2710649

Int. Cl.[2] F15B *13/042*

U.S. Cl. 91—461 **10 Claims**



1. A control device for controlling the supply of fluid to a double-acting jack for extending and retracting the jack, the control device comprising first and second valves, each valve comprising a housing and a valve member movable in the housing, each valve housing having an inlet passage, an outlet

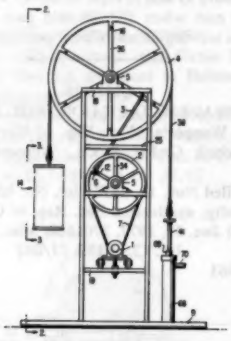
passage, and a jack-supply passage, each valve member being movable in its said housing between a first position in which its jack-supply passage is connected to its outlet passage and a second position in which its jack-supply passage is connected to its inlet passage, each valve member having a piston portion, each piston portion having first and second faces disposed one on each side thereof, a pressure chamber being defined between the first face of each piston portion and its corresponding housing, each said first face of each valve member piston portion being subjected to fluid pressure in its corresponding pressure chamber to urge the valve member towards its first position, and each said second face being subjected to the pressure in the inlet passage to urge the valve member towards its second position, each said first face having an effective surface area larger than the effective surface area of its corresponding second face whereby to produce a resultant force urging each valve member towards its first position when pressures on the first and second face of each piston portion are equal, each pressure chamber having a bleed valve for bleeding fluid therefrom, each bleed valve having an operating member operable to open the bleed valve to relieve the pressure in its associated pressure chamber and allow its associated valve member to be moved to its second position by fluid pressure exerted on its said second force, the valve member of said first valve having a passage extending through its piston portion and placing its associated pressure chamber in communication with its inlet passage, the control unit further comprising a valve-connecting passage for placing the jack-supply passage of the first valve in communication with the pressure chamber of the second valve.

4,161,137

ROCKER WHEEL JACK FOR AN OIL-WELL PUMP

Arthur K. Gaddy, 925 Gabaldon NW., Albuquerque, N. Mex. 87104

Filed Mar. 14, 1977, Ser. No. 777,466
Int. Cl.[2] F01B *9/00*
U.S. Cl. 92—13 **2 Claims**



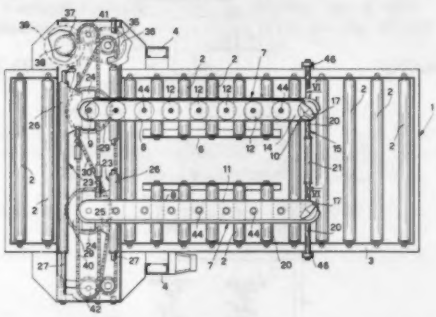
1. A wheel jack comprising:
a support frame,
a drive motor,
means supporting the drive motor on the frame,
a rotating rocker drive,
means supporting the rotating rocker drive on the frame,
a rocker wheel,
means supporting the rocker wheel for back-and-forth rocking movement on the frame,
means connecting the motor to the rocker drive for moving the latter,
means connecting the rocker drive to the wheel for rocking the latter back and forth, and
cable means supported on the wheel so that back-and-forth movement of the wheel moves one end of the cable means to operate a sucker rod, for example,
the rocker drive being supported on a first shaft and the rocker wheel on a second shaft spaced from the first shaft, further comprising
means to variably spaced the first and the second shafts relative to each other.

4,161,138

MACHINE FOR SEALING PARALLELEPIPED BOXES

Augusto Marchetti, Piazza Sicilia, 7, Milan, Italy

Filed Mar. 24, 1978, Ser. No. 889,717
Claims priority, application Italy, Apr. 1, 1977, 22013 A/77
Int. Cl.[2] B31B *1/60*; B65G *15/00*
U.S. Cl. 93—36.9 **4 Claims**



1. A machine for sealing parallelepiped boxes composed of two vertical side walls, two vertical end walls, a group of upper closing flaps and a group of lower closing flaps, comprising a support surface for the boxes to be sealed, a pair of entraining elements including conveyor belts disposed in a transversely displaceable manner at the two sides of said support surface to engage with respective side walls of the boxes in order to feed them along said support surface, and at least one taping head disposed above said support surface to apply an adhesive sealing tape to the top of the boxes as they advance along said support surface, each conveyor belt extending as an endless loop about a respective succession of rollers with their axes parallel and spaced apart along the feed direction of the boxes, of which the most downstream roller is rotated by motor means, wherein said most downstream roller associated with each conveyor belt has a drive shaft rotatably supported by a slide which can be controllably spaced along a guide transverse to the feed direction of the boxes, on said shaft there being mounted a sprocket which cooperates with the analogous sprocket associated with the other conveyor belt, with a drive sprocket disposed in proximity to one side of said support surface and rotated by a motor, and with a chain tightening sprocket disposed in proximity to the other side of said support surface, by way of a chain which engages at its opposite ends with said sprockets associated with the conveyor belts.

4,161,139

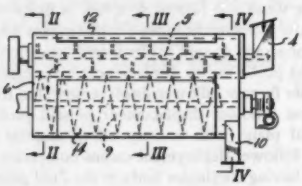
CONDITIONING APPARATUS

Franciscus Van Deuren, Boxtel, Netherlands, assignor to Simon-Heesen B.V., Boxtel, Netherlands

Filed May 1, 1978, Ser. No. 901,824
Claims priority, application Netherlands, May 11, 1977, 7705234
Int. Cl.[2] A01J *11/04, 13/00*
U.S. Cl. 99—467 **7 Claims**

1. Apparatus for the treatment of animal feedstuff prior to pelletising thereof comprising a conditioning vessel and at least one sterilisation vessel, each of which is in the form of a cylindrical drum, means for feeding the material to be treated through the conditioning vessel where steam or other additive can be applied, means for passing material from the condition-

ing vessel to the sterilisation vessel or vessels and means for discharging material from the sterilisation vessel or vessels after a required residence time therein, said conditioning vessel and said sterilisation vessel or vessels being arranged in spaced



apart relationship and connected by walls to form an integral structure having a single chamber between said vessels through which a heating medium may be passed, thus to heat the contents of both the conditioning vessel and the or each sterilisation vessel.

4,161,140

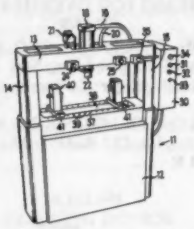
PROTECTED ROCKER-ARM SAFETY DEVICE FOR PRESSES

Paul C. Altman, 2821 Valley Forge Rd., Lisle, Ill. 60532

Filed Sep. 1, 1977, Ser. No. 829,591

Int. Cl.[2] B30B *1/08*; F16P *7/00*

U.S. Cl. 100—53 **21 Claims**



1. A safety device for a press of the type having two platens coupled to a framework with the first of said platens movable under an applied force toward the second of said platens, said safety device comprising:

(A) a substantially rigid member capable of withstanding, along at least one dimension, the force of one of said platens moving towards the other of said platens;

(B) a supporting structure including mounting means for allowing the affixing of said supporting structure to said press;

(C) attaching means, coupled to said member and said structure, for rotationally coupling said member to said structure, said attaching means allowing rotation of said member about an axis passing through said member between first and second positions, said mounting means allowing the affixing of said structure to said press with said member, when in said first position, lying partly in the path of a platen moving relative to said member as said first platen moves towards said second platen and having an angular disposition relative to said path of said relatively moving platen, and, when in said second position, lying out of said path of said relatively moving platen;

(D) moving means, coupled to said member, for rotating said member between said first and said second positions;

(E) relief means, coupled to said structure, for, (1) with said structure affixed to said press, (2) said member in said first position, and (3) said member in contact with said relatively moving platen, relieving from said attaching means substantially all force imposed on said member by said relatively moving platen, said relief means lying out of the path of said relatively moving platen as first platen moves towards said second platen; and

(F) control means for regulating the actuation of said moving means.

4,161,141

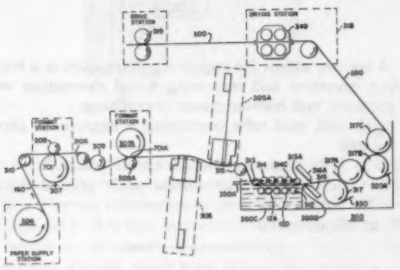
TWO SIDE MULTI ROLLER TONER STATION FOR ELECTROGRAPHIC NON-IMPACT PRINTER

Kishor M. Lakhani, 5428 NW. 66th St., Oklahoma City, Okla. 73132

Filed Oct. 5, 1977, Ser. No. 839,692

Int. Cl.[2] G03G *13/00*; B41F *35/00*

U.S. Cl. 101—1 **11 Claims**



1. In an electrographic printing system of the type wherein a recording medium, comprised of a conductively treated paper base supporting a plastic dielectric coating on each of its sides and traveling along a path, has electrographic images formed thereon by selectively applying a high potential across the recording medium and wherein the latent images are subsequently made visible by applying a toner to the medium:

an electrode structure on each side of said recording medium, each electrode structure spaced adjacent the path of said recording medium and including a plurality of spaced rows of electrodes, with successive electrodes in each of said rows being spaced from each other, and with the electrodes of successive rows being staggered;

first means for selectively energizing each of said electrodes, whereby latent electrographic images are selectively formed substantially simultaneously on each side of said recording medium; and,

a two-sided toner applicator station for developing substantially simultaneously the latent images formed on each side of said recording medium by applying toner solution substantially simultaneously to two sides of the recording medium;

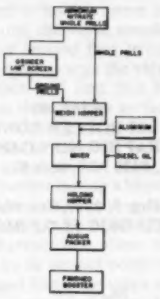
said two-sided toner applicator station including a first set of development electrodes for developing the latent images formed on a first side of said recording medium, and a second set of development electrodes for developing the latent images formed on a second side of said recording medium, said first and second sets of development electrodes being operative for developing the latent images on each side of said recording medium; wherein said two-sided toner applicator station includes second means for effecting the level of the toner liquid below said first side of said recording medium whereby said first set of development electrodes are operative thereby effecting a one-sided toner applicator station.

4,161,142

BLASTING BOOSTER AND METHODS

Donald W. Edwards, Lehighton, Pa., and Luther R. Wells, Jr., Glasgow, Ky., assignors to Southern Explosives Corporation, Glasgow, Ky.

Filed Sep. 26, 1977, Ser. No. 836,714
Int. Cl.[2] C06B 31/28, 33/04; F42D 1/00, 3/00
U.S. Cl. 102—23 36 Claims



1. A booster means for improving detonation in a bore hole blasting operation and increasing initial detonation velocity and pressure, said booster means comprising:

a rigid tube, said tube containing a mixture of about, by weight:

12% to 35% whole ammonium nitrate prills;

60% to 80% ammonium nitrate prills ground through a 1/16" screen; and

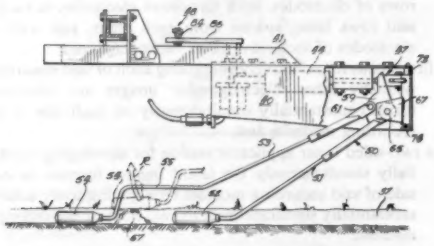
3% to 8% diesel oil.

4,161,143

AUTOMATIC STEERING MECHANISM

Mark E. Fasse, 725 N. 92nd Ct., Apt. 106, Omaha, Nebr. 68114, and Herbert C. Glesmann, 3608 S. 102nd St., Omaha, Nebr. 68124

Filed Mar. 21, 1977, Ser. No. 779,684
Int. Cl.[2] B62D 1/26
U.S. Cl. 104—244.1 8 Claims



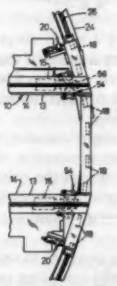
1. An automatic steering mechanism for causing a prime mover to selectively follow a furrow, the prime mover having a steering gear and a fluid power circuit for operating the steering gear, the automatic steering mechanism comprising a furrow follower mounted on the prime mover, furrow follower deployment means in the fluid power circuit for lowering the follower into a lowered position in a furrow and for raising the follower from the furrow into a raised position, and a multi-positionable guidance valve in the fluid power circuit selectively and operatively connected to the furrow follower and steering gear to cause the prime mover to be steered in the direction sensed by the furrow follower when the follower is in its lowered position, the guidance valve also including means for operating the follower deployment means to raise and lower the furrow follower from and to its lowered operative position in the furrow, and means for halting fluid flow to portions of the fluid power circuit which are downstream of the valve when the furrow follower is in its raised position, said furrow follower includes a probe means and a probe drag means connected to said probe means, said probe drag means permitting probe means displacement in a vertical plane without further furrow follower displacement, but following angular furrow follower displacement of said probe means in a horizontal plane with corresponding angular displacement, and said follower deployment means comprises a fluid power cylinder having a cylinder body in the fluid power circuit and cylinder rod means extending from the cylinder body and adapted to engage the probe drag means to rotate the probe drag means and the attached probe means in a vertical plane between the probe raised position and the probe lower position upon appropriate actuation of the guidance valve.

4,161,144

RESTRAINT MEANS FOR OVERHEAD TRAVELLING CRANE

Indulis E. Raugulis, Shorewood; Craig D. Dewey, Menomonee Falls, and Richard H. Gundrum, New Berlin, all of Wis., assignors to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Feb. 27, 1978, Ser. No. 881,524
Int. Cl.[2] B61F 7/00
U.S. Cl. 105—163 R 17 Claims



1. In combination:

a structure subject to oscillation resulting from shocks;

a crane supported on said structure;

and restraint means connected to said crane and in constant resilient engagement with said structure to control shifting movement of said crane relative to said structure resulting from said oscillations, said restraint means comprising:

a movable member connected to said crane;

biasing means for urging said movable member generally horizontally against said structure;

and a shock absorber connected to said movable member for controlling movement of said movable member away from said structure whereby said biasing means maintains said movable member in constant engagement with said structure.

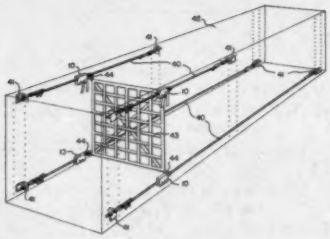
4,161,145
ADJUSTABLE BULKHEAD ASSEMBLY

William W. Patterson, III, and Eugene F. Grapes, both c/o W. W. Patterson & Company, 830 Brocket St., Pittsburgh, Pa. 15233

Continuation-in-part of Ser. No. 618,807, Oct. 2, 1975, Pat. No. 4,062,520, which is a continuation-in-part of Ser. No. 399,826, Sep. 24, 1973, Pat. No. 3,934,855. This application Jul. 1, 1977, Ser. No. 812,252

Int. Cl.[2] B60P *7/14, 7/16;* B61D *45/00;* B65G *1/14*

U.S. Cl. 105—376 10 Claims



1. A movable bulkhead and cargo restraint assembly comprising a plurality of spaced apart elongated strands fixed at one end to a confining wall of a cargo space, said strands being spaced apart around a cargo to be restrained, bulkhead means movable on said elongated strands lengthwise thereof on the side of the cargo opposite said one end to contact the cargo to be restrained, and an independent movable clamp means independently adjustable on each strand bearing against said bulkhead means opposite the cargo automatically engaging said strand when taut to restrain said bulkhead against movement away from the cargo and said clamp means automatically releasing the strand on movement in the opposite direction toward said cargo whereby said clamp means is adjusted to tightly hold the bulkhead means against said cargo.

4,161,146
STACKING DEVICE

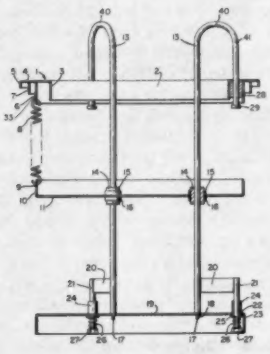
Pieter L. Kooiman, Achterambachtseweg, Netherlands, assignor to Avedko B.V., Dordrecht, Netherlands

Filed Dec. 2, 1977, Ser. No. 856,860

Claims priority, application Netherlands, Aug. 25, 1977, 7709380

Int. Cl.[2] A47B *9/02;* A47F *7/00*

U.S. Cl. 108—136 8 Claims



1. A device for dispensing articles from a stack while maintaining the uppermost article of the stack at a predetermined dispensing level independent of the number of articles in the stack, said device comprising an upper annular member through which the articles are dispensed, a plurality of vertical post members, each having at the upper end thereof an outwardly turned inverted U-shaped portion with a short outer leg portion, said short outer leg portions supporting said annular member and an article carrier tray vertically slidable beneath said annular member while being guided by said vertical post members.

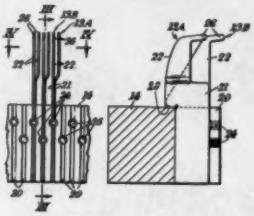
4,161,147
LOOPER MECHANISM FOR A TUFTING MACHINE

Kenneth Lund, Accrington, England, assignor to Edgar Pickering (Blackburn) Limited, Blackburn, England

Filed Mar. 10, 1978, Ser. No. 885,165

Int. Cl.[2] D05C *15/22*

U.S. Cl. 112—79 R 2 Claims



1. In a tufting machine for producing loop pile fabric, and having a vertically reciprocable needle bar carrying a plurality of needles, a looper mechanism comprising a looper bar carrying loopers each of which cooperates with a respective individual needle on the needle bar, each looper having a lower shank portion, a single upper hook portion for engaging loops of yarn formed by the needle cooperating with said looper and a shoulder intermediate said shank portion and said hook portion, means for oscillating the looper bar to effect cooperation between said loopers and said needles, the looper bar having, in a side thereof facing the needles, a plurality of slots each of which accommodates, side-by-side, each shank portion of a pair of loopers with each hook portion thereof facing the needles and each shoulder thereof abutting an upper surface of the looper bar to position each said hook portion at the same level above the looper bar, the hook portion of one looper of the pair being coplanar with its shank portion and the hook portion of the other looper being offset from its shank portion by an amount equal to the spacing between the needles, and a plurality of clamping screws, each of which retains said pair of loopers in said slots in said looper bar.

4,161,148
METHOD OF SEWING A BUTTON ON A THREAD STEM AND SEMI-AUTOMATIC MACHINE FOR PERFORMING SAME

Vladimir I. Bakhalov, Moscow; Gennady V. Volvenkov, Moskovskaya oblast, Scherbinka; Valentin P. Polukhin, Moskovskaya oblast, Vidnoe; Vadim S. Starokadomsky, and Arkady V. Ter-Bogdasarov, both of Moscow, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Legkogo I Textilnogo Mashinostroenia, U.S.S.R.

Filed Jan. 12, 1978, Ser. No. 869,013

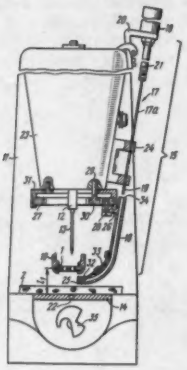
Claims priority, application U.S.S.R., Feb. 10, 1977, 2448962

Int. Cl.[2] D05B *3/14*

U.S. Cl. 112—110 6 Claims

1. In a semi-automatic machine for sewing a button on a stem of thread, comprising: a housing; a needle bar with a needle through which a needle thread passes; a throat plate located below the needle with an opening aligned with the needle for the passage of the needle with the needle thread therethrough; a button holder mounted at a predetermined spacing from said

throat plate and adapted to accommodate a button having holes which is to be sewn onto a cloth adapted to be accommodated between the button holder and the throat plate, by guiding the needle thread by the needle through the holes of the button and the cloth and forming a foot from this thread, an improvement including a device for forming a stem of the needle thread mounted on said housing, said device comprising: a trough rotatably mounted about said needle adapted to rotate during the process of sewing on the button and having one of its ends underlying said button holder; means for rotat-



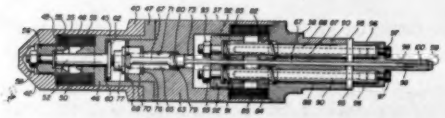
ably mounting said trough with respect to said needle; means for engaging the needle thread and providing a reserve length thereof upon this thread having been guided through one hole of the button and through the cloth, said thread engaging means being mounted for travel through said trough to underlie said button holder to engage the needle thread and to exit from the trough prior to the trough being rotated and the reserve length of the needle thread having been provided; means for driving said needle thread-engaging means for the travel through said trough and retraction therefrom; and means for rotating said trough.

4,161,149

CUTTING APPARATUS FOR FLATBED SEWING MACHINE

Miroslav Baran, Trenton, Canada, assignor to Bata Shoe Company, Inc., Belcamp, Md.

Filed May 5, 1977, Ser. No. 794,252
Claims priority, application Canada, May 12, 1976, 252340
Int. Cl.[2] D05B *37/04*
U.S. Cl. 112—130 **4 Claims**



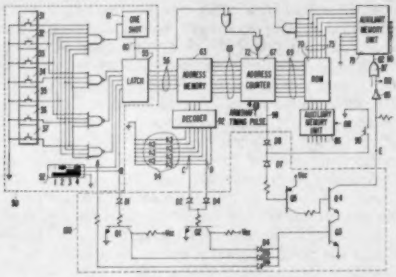
1. A cutting apparatus for cutting a strip of material connected to a component and extending beyond at least one edge thereof, the cutting being performed at said one edge, said apparatus comprising blade means for cutting the strip; tension means for tensioning the strip during cutting thereof; first plunger means engaging the tension means; second plunger means engaging the blade means; electromagnetic drive means for moving the first plunger means and tension means from a rest position to a tensioning position on each side of the blade means, and for moving said second plunger means and blade means from a rest position to a cutting position between the tensioning means; sensor means for actuating said drive means when the component and strip are properly located beneath the blade means, said electromagnetic drive means including a core formed of magnetic material on each of said first and second plunger means; first and second coils around said first and second plunger means; and circuit means for energizing said first and second coils sequentially in response to signals from said sensor means, whereby the first plunger means and tension means are moved to the tensioning position before movement of the second plunger means and blade means to the cutting position; and means for returning the blade means, tension means, and first and second plunger means to the rest position.

4,161,150

SIMPLIFIED ACTUATION OF TWO STEP BUTTONHOLE IN ELECTRONICALLY CONTROLLED SEWING MACHINE

Jack Brown, Union, N.J., assignor to The Singer Company, New York, N.Y.

Filed Oct. 23, 1978, Ser. No. 954,017
Int. Cl.[2] D05B *3/06, 3/02*
U.S. Cl. 112—158 E **4 Claims**



1. An electronically controlled sewing machine having stitching instrumentalities; actuators for positioning said stitching instrumentalities in the formation of a sequence of stitches; a first logic device including at least one memory device containing sequential stitch information for release to said actuators, including information for reverse stitching; a selector means for retrieving selected stitch information from said memory device, said selector means including means for selecting at least one form of a buttonhole and means for selecting reverse stitching; said first logic device being responsive to selection of said at least one form of a buttonhole to release sequential stitch information from said memory device to said actuator of a first step of said buttonhole beginning with a first end thereof and terminating in a series of inner and outer stitches of a first leg thereof, said first logic device being further responsive to an extraneous signal to terminate the release of stitch information of said inner and outer stitches of said first leg, and to initiate the release of sequential stitch information from said memory device to said actuators of the second step of said buttonhole beginning with a second end thereof and terminating in a series of inner and outer stitches of a second leg thereof; wherein the improvement comprises:

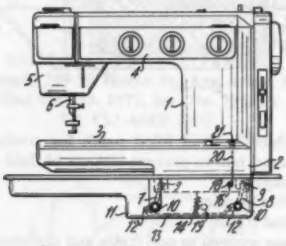
means for connecting said reverse selecting means to said first logic device as a generator of said extraneous signals and as a reverse stitch selector; and,

means responsive to selection of said means for selecting at least one form of a buttonhole for enabling operation of said reverse selecting means as a generator of said extraneous signal and responsive to non-selection of said buttonhole selecting means for enabling operation of said reverse selecting means to effect reverse straight stitching.

4,161,151
SEWING MACHINE

Marcel Fresard, Petit-Lancy, and Antonio Jimenez, Meyrin, both of Switzerland, assignors to Mefina S.A., Fribourg, Switzerland

Filed Jan. 25, 1978, Ser. No. 872,034
Claims priority, application Switzerland, Feb. 8, 1977, 1475/77; Sep. 1, 1977, 10662/77
Int. Cl.[2] D05B *73/10*
U.S. Cl. 112—217.1 **6 Claims**



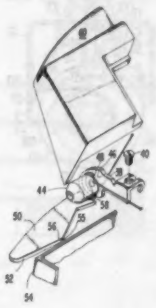
1. In a sewing machine adapted to be mounted in a support member, comprising a column, a lower frame member on which said column is mounted, said lower frame member including a free arm portion extending therefrom, an upper arm on said column disposed generally parallel to said free arm portion and terminating in a head in which a drive mechanism of a needle carrying bar is provided, a casing, means pivotally connecting said lower frame member to said casing, said means comprising at least two support members pivoted at one of their ends to said frame member and pivoted at their other ends to said casing, the improvement wherein said support members connect said lower frame member to said casing in such a manner as to permit displacement of the machine with respect to the casing between a first position in which the lower framework member and the free arm are housed in said casing, with their upper faces being generally at the level of the upper edge of the casing, and a second position in which the free arm is on the elevated position above the casing, a connecting rod pivoted at its ends to two of said support members so as to ensure maintenance of their parallelism when the machine is displaced from its first position into its second position, said support members comprising links pivoted in pairs on two sides of said lower frame member and pivoted to the inside of said casing, at least one of each such pair of links provided with an extension at one of its pivotal ends and on which one of the ends of said connecting rod is pivoted thus connecting it to a link of the other pair, a bearing of non-circular transverse section on at least one end of said links to permit compensation for the manufacturing tolerances of the assembly of the pivots points of said links and of said connecting rods.

4,161,152
PRETENSION THREADING DEVICE

William L. Herron, Elizabeth, N.J., assignor to The Singer Company, New York, N.Y.

Filed Oct. 12, 1978, Ser. No. 950,654
Int. Cl.[2] D05B *47/00*
U.S. Cl. 112—254 **1 Claim**

1. A pretension threading device facilitating threading of a pretension device of a sewing machine having a base and a bracket arm with a rear surface and a rear corner at one extremity of said arm, said arm overhanging said base and supporting a thread supply for supplying thread to said pretension device, said pretension threading device comprising an elongated ear fastened to said bracket arm and extending away from said thread supply along the rear surface of said arm and having a segment projecting beyond the rear corner of said arm, said ear having said pretension device attached thereto and having a thread holding notch for engaging thread from said thread supply against said pretension device, said ear also having an edge for guiding thread from said projecting segment to said thread holding notch, and a fin disposed in covering relation about said pretension device, said fin tapering away from said thread supply toward said rear corner of said



arm, and a lip depending from said fin, said lip tapering toward said rear corner of said arm to form an expansive slot between said fin and said ear at said rear corner, said lip guiding a length of thread drawn under said segment of said ear projecting beyond said rear corner and between said arm and said ear toward said thread holding notch and said pretension device.

4,161,153
THREAD WINDING MECHANISM FOR SEWING MACHINE

Hideo Nawa, Chiryu, and Yujiro Takikawa, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Nov. 18, 1977, Ser. No. 852,749
Claims priority, application Japan, Nov. 18, 1976, 51/153867[U]
Int. Cl.[2] D05B *59/00*; B65H *54/18*
U.S. Cl. 112—279 **4 Claims**

1. A thread winding mechanism for a sewing machine including a motor which comprises:

a thread winding shaft, provided in an arm of the sewing machine, an upper portion thereof being extended from said arm for inserting a bobbin thereon;

a bearing member connected to said arm;

rotatable guide means disposed within said arm and including a guide member rotatably supporting thereon said thread winding shaft with said bearing member being disposed between said thread winding shaft and said guide member and being vertically movable along said thread winding shaft during bobbin insertion on said thread winding shaft;

lever means pivotally mounted on said arm and operatively connected to said bearing member of said guide means, said lever means being rotatable in response to the vertical movement of said bearing member;

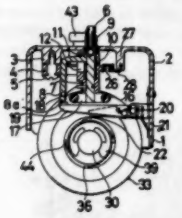
a main shaft connected to said arm;

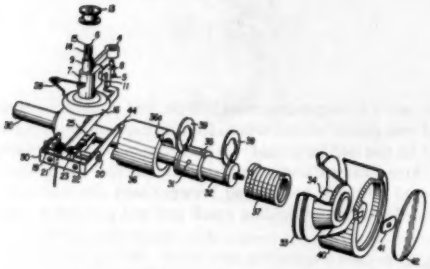
a drive pulley transmitting rotational torque from said motor of the machine to said main shaft;

clutch means normally engaging said main shaft with said drive pulley for unitary rotation therebetween; and

a torque transmitting pulley secured to the lower end of said

thread winding shaft for transmitting torque from said drive pulley to said thread winding shaft when said thread winding shaft is rotated about said drive means from an inoperative position to an operative position.





4,161,154

STABILIZING DEVICE FOR SHIPS

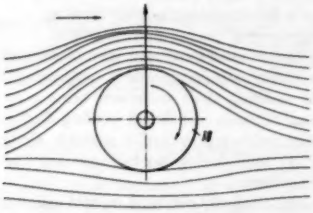
Walter M. Kollenberger, deceased, late of Hamburg, Fed. Rep. of Germany (by Kathe L. M. Kollenberger, administratrix), assignor to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel, Kiel, Fed. Rep. of Germany

Continuation of Ser. No. 784,705, Apr. 5, 1977, abandoned, which is a continuation-in-part of Ser. No. 697,755, Jun. 21, 1976, abandoned, which is a continuation of Ser. No. 595,334, Jul. 14, 1975, abandoned. This application Jan. 30, 1978, Ser. No. 873,716

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1974, 2434257

Int. Cl.[2] B63B *39/00, 43/02*

U.S. Cl. 114—122 **3 Claims**



1. A stabilizing apparatus for a body comprising inner and outer rotors arranged concentrically one within another and rotatable in opposite directions provided on each side of the body to be stabilized, means to move the outer rotors alternatively into and out of said body and means attachable to each side of said body to hold said inner rotors in a fixed relationship with said body.

4,161,155

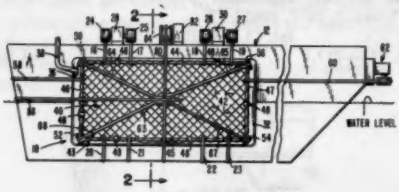
PATCH FOR SHIP HULLS

Charles C. Cloutier, P.O. Box 885, Morgan City, La. 70380

Filed Jun. 30, 1978, Ser. No. 921,025

Int. Cl.[2] B63B *43/16*

U.S. Cl. 114—227 **12 Claims**



1. An inflatable, fluid filled patch for covering damaged areas of a vessel hull to prevent leakage of fluid material from the hull, comprising:

an inflatable bladder;

a peripheral frame;

mesh means secured to said frame and covering said bladder for securing the bladder to a hull;

securing cable means for positioning said bladder on the hull;

bracket means having a plurality of legs secured at one end to said peripheral frame and extending thereabove and converging at the other end to a common apex; and

tensioning cable means for applying pressure to the apex of said bracket means and thence to said peripheral frame to seal the edges of said bladder against the hull.

4,161,156

POWER PROPELLED BOAT WITH IMPROVED ELECTRICAL CONNECTOR

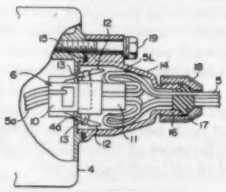
Masato Sato, Akashi, and Keiichi Nakamizo, Himeji, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Aug. 16, 1977, Ser. No. 825,032

Claims priority, application Japan, Aug. 19, 1976, 51-111513[U]

Int. Cl.[2] B63B *35/72*

U.S. Cl. 115—76 **6 Claims**



1. Power propelled boat comprising a boat hull, an engine unit having engine body means mounted on the boat hull for providing propulsive force, and at least one electric component for the engine unit which is positioned in a water-tight casing mounted on the boat hull, said engine unit having at least one electric part which is functionally associated with said electric component and mounted on said engine body, wire means for connecting said electric part with said electric component, said wire means having one end connected with said electric part and the other end adapted to be connected with said electric component, removable connector means for connecting said other end with said electric component, said removable connector means including disconnectable jack and receptacle means for releasably connecting said other end with said electric component, water-tight cover means releasably secured to the casing for encircling said jack and receptacle means, resilient grommet means for supporting said wire means

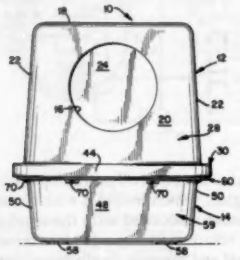
passed therethrough, said grommet means being located on said cover means, and cap means adapted to be engaged with said cover means for compressing the grommet means so as to provide water-tight seal between the cover means, the grommet means, and the wire means, said wire means being formed with loop means in said cover means so that excess length of wire means is stored in said cover means.

4,161,157

ANIMAL LITTER CONTAINER

Donald J. Haugen, 709 W. Huron St., Ann Arbor, Mich. 48103

Filed May 13, 1977, Ser. No. 796,591
Int. Cl.[2] A01K *1/00*
U.S. Cl. 119—1 **17 Claims**



1. An animal litter container comprising:
(a) an upper enclosure portion defined by generally upstanding walls including a front wall, a rear wall, and a pair of side walls, and by a top wall extending between said generally upstanding walls;
(b) a lower enclosure portion, said upper and lower enclosure portions defining an enclosed space when coupled together;
(c) said upper enclosure portion including means for providing access for an animal to said enclosed space, said access means including an opening in one of said upstanding walls;
(d) means between said upper and lower enclosure portions for coupling said enclosure portions together;
(e) means for preventing liquid from collecting in said coupling means, said preventing means including a portion of said upper enclosure portion projecting into said enclosed space, said projecting portion extending substantially entirely around said upper enclosure portion and having a free extremity, said free extremity being spaced from said coupling means.

4,161,158

PRESERVATION OF LIVE FISH BAIT

Frank A. Kartesz, 760 Somerset Ave., Rockwood, Pa. 15557

Filed Aug. 3, 1977, Ser. No. 821,615
Int. Cl.[2] A01K *67/00*
U.S. Cl. 119—1 **12 Claims**

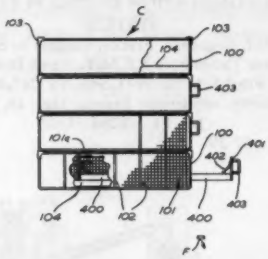
1. A method of preserving underground and surface dwelling fish bait comprising:
packing the bait in a media containing nutrients, an antibiotic and a stress relieving drug; and,
maintaining the temperature of said packed bait between 33 and 55 degrees Fahrenheit.

4,161,159

INSTANTANEOUSLY EMPTIABLE EXTERNALLY MOUNTED ANIMAL FOOD TRAY

Basil K. J. Leong, Portage, Mich., assignor to International Research and Development Corp., Mattawan, Mich.

Filed Jul. 5, 1977, Ser. No. 812,639
Int. Cl.[2] A01K *1/02*
U.S. Cl. 119—18 **14 Claims**



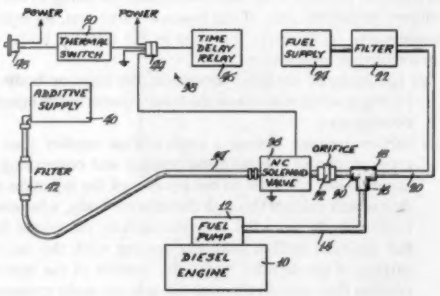
1. A readily emptiable animal food tray, for use in conjunction with a plurality of animal cages mounted side-by-side and having support means of approximately the same width as said food tray therebetween, whereby said animal cages are spaced from each other approximately the width of said animal food tray thereby forming a recess therebetween, comprising a bottom, vertically extending members at the ends of said tray which are adapted substantially to correspond to the cross-section of the recess between said adjacent animal cages immediately above said tray bottom, and gripping means on the vertically extending member at one end of said tray for pushing or pulling said tray into and out of the said opening between adjacent animal cages, said bottom of said tray being angled downwardly from a central longitudinal apex to its lower edges.

4,161,160

FUEL ADDITIVE INJECTION SYSTEM FOR DIESEL ENGINES

George E. Hicks; John W. Litherland, both of Peoria; Arlan G. Martin, Morton, and Lawrence Williams, Peoria Heights, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 31, 1977, Ser. No. 847,530
Int. Cl.[2] F02M *43/00*
U.S. Cl. 123—1 A **7 Claims**



1. In a diesel fuel supply system, the combination of:
a fuel pump for supplying fuel to a diesel engine;
a fuel tank connected to said pump for delivering fuel to the pump;
a fuel additive tank;
a valve;

means connecting said additive tank to said pump through said valve in parallel relation to said fuel tank; and

means for selectively operating said valve.

4,161,161

DEVICE FOR DAMPING PRESSURE WAVES IN AN INTERNAL COMBUSTION ENGINE FUEL INJECTION SYSTEM

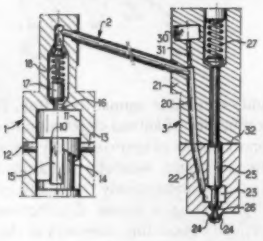
Dirk Bastenhof, Eaubonne, France, assignor to Societe d'Etudes de Machines Thermiques S.E.M.T., Saint Denis, France

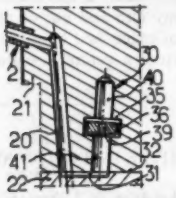
Filed Feb. 10, 1977, Ser. No. 767,485

Claims priority, application France, Mar. 15, 1976, 76 07337

Int. Cl.[2] F02M *55/02*

U.S. Cl. 123—32 JV **6 Claims**





1. A device for injecting liquid fuel into an internal combustion engine, the device comprising an injection pump and an injector, the injector including an injector body, an injector nozzle having an injector valve seat and at least one fuel delivery orifice, an injection conduit having a portion extending through the injector body and connecting the pump to the fuel delivery orifice by way of the injector valve seat, an injector needle valve reciprocally mounted in the injector body, said device further comprising:

an accumulator chamber formed in the injector body and having a volume less than the total volume of the injection conduit and

a narrow passage having a cross-section smaller than the cross-section of the injection conduit and connecting the accumulator chamber to the portion of the injection conduit which extends through the injector body, wherein the injector body has a flat junction surface, the nozzle has a flat junction surface sealingly mating with the junction surface of the injector body, the portion of the injection conduit that extends through the injector body crosses the plane of the junction surfaces into the injector nozzle, the accumulator chamber comprises a blind hole drilled into the injector body from the junction surface thereof at a location spaced from the intersection of the injection conduit with said junction surface, and the narrow passage comprises a slot in one of the junction surfaces of the injector body and the injector nozzle.

4,161,162

METHOD AND APPARATUS FOR CONTROLLING THE OPERATION OF AN INTERNAL COMBUSTION ENGINE

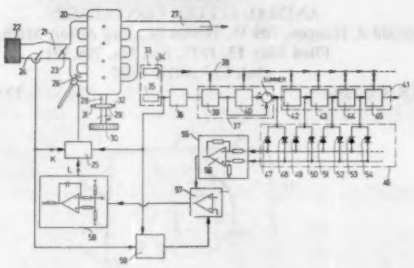
Reinhard Latsch, Vaihingen, and Valerio Bianchi, Leonberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 564,073, Apr. 1, 1975, abandoned. This application Jul. 7, 1977, Ser. No. 815,383

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1974, 2417187

Int. Cl.[2] F02B *3/00*

U.S. Cl. 123—32 EA **24 Claims**



1. An apparatus for controlling the operation of an internal combustion engine, which includes a crankshaft, comprising:

(A) sensor means associated with the crankshaft, for sensing crankshaft rotation during a predetermined measurement-time interval and forming an electrical signal related to the crankshaft rotation, said measurement-time interval corresponding to an angular region of the crankshaft rotation related to at least one stroke of a piston of the engine;

(B) actual value signal generator means including integration means, connected to said sensor means, for integrating sequential ones of the electrical signals generated by the sensor means generating during the predetermined measurement-time interval an electrical actual value signal related to the speed of rotation of the crankshaft, which signal is representative of the fluctuation in the average combustion chamber pressure in two sequential time intervals;

(C) nominal value signal generator means, for generating an electrical nominal value signal from engine parameters;

(D) first comparator means, for electrically comparing said actual value signal with said nominal value signal and for forming an electrical output signal; and

(E) servo means, connected to the output of said first comparator means, for adjusting the composition of the fuel-air mixture of said internal combustion engine in response to the electrical output signal.

4,161,163

TWO CYCLE INTERNAL COMBUSTION ENGINE

Eyvind Boyesen, Kempton, Pa., assignor to Performance Industries, Inc., Kempton, Pa.

Continuation-in-part of Ser. No. 674,102, Apr. 6, 1976, Pat. No. 4,062,331, and a continuation-in-part of Ser. No. 586,138, Jun. 11, 1975, Pat. No. 4,051,820, which is a continuation-in-part of Ser. No. 375,065, Jun. 29, 1973, Pat. No. 3,905,340, which is a continuation-in-part of Ser. No. 282,734, Aug. 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 361,407, May 18, 1973, abandoned, Ser. No. 416,231, Nov. 15, 1973, Pat. No. 4,000,723, and Ser. No. 416,215, Nov. 15, 1973, Pat. No. 3,905,341, each is a division of said Ser. No. 375,065

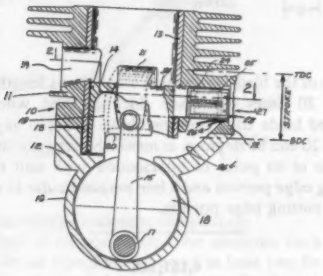
This application Oct. 4, 1977, Ser. No. 839,180

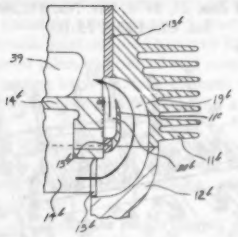
Int. Cl.[2] F02B *33/04*

U.S. Cl. 123—73 A **7 Claims**

6. A variable speed, two-cycle, crankcase compression internal combustion engine comprising a cylinder, a piston working

in the cylinder, a crankcase having a crank space below the cylinder, a combustion chamber above the piston and a fuel flow space immediately below the piston but above the crank space even in bottom dead center position of the piston, fuel intake porting and passage means for supplying fuel to the engine and including fuel intake porting in the cylinder wall confronting the bottom dead center position of the piston and being of sufficient axial dimension to supply fuel to said fuel space immediately below the piston throughout at least a substantial part of the upward stroke of the piston and further





including a fuel tract approaching the cylinder in the region of said intake porting above said fuel space, a fuel transfer system having transfer porting through the cylinder wall above the piston in bottom dead center position and comprising passage means providing uninterrupted intercommunication between said transfer porting and said tract, a passage providing uninterrupted intercommunication between said fuel space and said fuel tract throughout the cycle of the engine, and reed valve means in said fuel tract for controlling the fuel supply to the engine.

4,161,164

INTERNAL COMBUSTION ENGINE FUEL SUPPLY SYSTEM

Erhard Mühlberg, Darmstadt-Eberstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

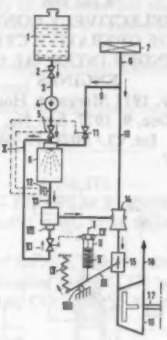
Division of Ser. No. 378,234, Jul. 16, 1973, abandoned. This application May 30, 1975, Ser. No. 582,473

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1972, 2235004

Int. Cl.[2] F02M *31/00*

U.S. Cl. 123—122 G **6 Claims**

1. In a method of operating an internal combustion engine, said engine including a fuel supply tank for receiving a liquid hydrocarbon fuel, a fuel line coupled to said fuel supply tank, a gas intake line, a throttle valve coupled to said engine and to said gas intake line, a converter for converting said liquid hydrocarbon fuel to a soot-free gaseous fuel by means of partial combustion, a first branch line coupled to said gas intake line, a gas metering valve coupled to said first branch line and to said converter, a first fuel metering valve coupled to said fuel line and said converter, an injection device coupled to said converter, a second branch line coupled to said fuel line between said fuel metering valve and said converter, and a second fuel metering valve coupled to said second branch line and to said injection device, said method including the steps of converting said liquid hydrocarbon fuel to a soot-free gaseous fuel by means of partial combustion in said converter while supplying an oxygen-containing gas to said converter by means of said first branch line and said gas metering valve, supplying said gaseous fuel to said engine, and supplying combustion air to said engine by means of said throttle valve and said gas



intake line to support combustion of said gaseous fuel, the improvement comprising the step of admixing, by means of said second fuel metering valve, liquid hydrocarbon fuel from said fuel supply tank with said gaseous fuel produced by said converter, subsequent to said step of converting and prior to said steps of supplying said gaseous fuel to said engine and supplying said combustion air to said engine, said step of admixing further comprising admixing said liquid hydrocarbon fuel with said gaseous fuel by opening said second fuel metering valve to admix said liquid hydrocarbon fuel with said gaseous fuel when said throttle valve is fully opened.

4,161,165

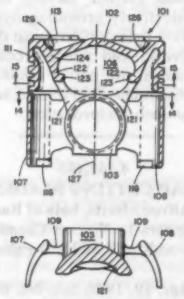
PISTON FOR AN INTERNAL COMBUSTION ENGINE

Richard Belush, and James A. Wade, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 586,895, Jun. 16, 1975, abandoned. This application Feb. 18, 1977, Ser. No. 770,109

Int. Cl.[2] F02F *3/02;* **F16J** *1/04*

U.S. Cl. 123—193 P **27 Claims**



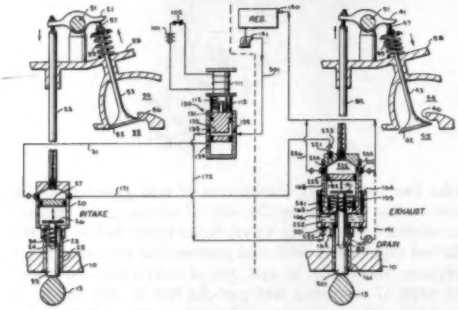
1. A piston for an internal combustion engine, comprising a circular dome, a ring band, a relatively thin flexible heat dam part connecting the outer periphery of said dome to said band, a support part connected to the underside of the dome and spaced radially inwardly from said band, said support part

being annular in cross section, said dome, said band, said dam part, and said support part being coaxial and generally symmetrical about the axis of the piston, piston pin bosses, said support part also being connected to said bosses and thus supporting said dome on said bosses, arcuate thrust pads at the sides of the piston, a plurality of struts connecting said pads with said bosses, said pads being supported by said bosses, whereby said dome, said ring band and said pads are substantially structurally separated and structurally function substantially independently of each other.

4,161,166
DEVICE FOR SELECTIVELY CONTROLLING THE NUMBER OF OPERATIVE CYLINDERS IN MULTI-CYLINDER INTERNAL COMBUSTION ENGINES

Frank B. Roznovsky, 1911 Margaret, Houston, Tex. 77093

Filed Dec. 9, 1977, Ser. No. 859,199
Int. Cl.[2] F02D *13/06*
U.S. Cl. 123—198 F **5 Claims**



1. In an engine having a hydraulic system, a fuel system, cam-carrying cam shaft and multiple combustion cylinders, each cylinder having an intake valve, exhaust valve, and said engine having means for selectively removing and returning one or more cylinders from and to the power cycle, the improvement comprising:

control means for (1) selectively providing hydraulic fluid from said hydraulic system to permit the opening of the intake valve in selected combustion cylinders chosen to remain in said power cycle, and (2) selectively withholding hydraulic fluid from selected cylinders to bar the opening of the intake valve in such selected combustion cylinders chosen to be withdrawn from such power cycle; and

said control means further having combination means therein for 1 selectively providing hydraulic fluid to selected combustion cylinders to cause the reciprocation of an exhaust valve in said selected combustion cylinders chosen to remain in the power cycle, and 2 selectively providing said hydraulic fluid to such selected combustion cylinders to bar such reciprocation.

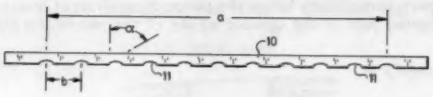
4,161,167
LAP CUTTING BLADES

Dieter Regler, and Alfred Moritz, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft für Elektronik Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Apr. 19, 1978, Ser. No. 897,837
Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722779
Int. Cl.[2] B28D *1/00, 1/08*
U.S. Cl. 125—18 **12 Claims**

1. A lap cutting blade usable for the multiple lap cutting of solid materials comprising:

an elongated lap cutting blade having a generally rectilinear cutting edge, the length of which is 1–75 times the thickness of the blade, as measured at its cutting edge, said cutting edge having rectilinear edge portions separated by a plurality of notched edge portions which, in turn, define a plurality of recesses which encompass 5 to 25% of the total blade length and 5 to 40% of the effective operating

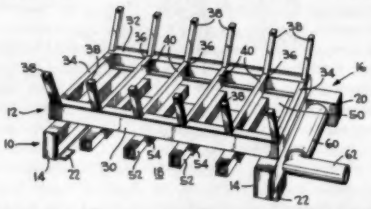


length of the blade and which each have a length between 10 to 20 times the blade thickness and wherein said notched blade edge portions define a notch angle of between 20 and 80 degrees, as measured between the tangent thereto at its point of intersection with said rectilinear cutting edge portion and a line perpendicular to said rectilinear cutting edge portion.

4,161,168
FIREPLACE GRATE

Donald D. Cagle, P.O. Box 3349, Station A, Fort Smith, Ark. 72913

Filed Jan. 27, 1978, Ser. No. 872,909
Int. Cl.[2] F23H *13/00*
U.S. Cl. 126—164 **12 Claims**



10. A fireplace grate comprising a lower supporting frame and a grill mounted thereon,

said lower frame consisting of a transversely extending rear member and a pair of side members extending right-angularly from the ends of the rear member and forming therewith a U-shaped structure the front of which is entirely open between the front ends of the side members,

the lower frame rear member being a tubular manifold open at one end for air input and closed at its opposite end,

a plurality of tubes extending forwardly in laterally spaced parallelism from removable connection of their rear ends to the manifold for receiving air therefrom and having their front ends open for discharge of said air,

and said grill comprising transversely extending front and rear members connected at their ends to forwardly extending side members and forming therewith a rectangular structure the side members of which bear on the side members of the lower frame,

brackets slidably hanging the front end portions of the tubes from the front member of the grill,

and the rear member of the grill being hinged to the manifold,

whereby the tubes secure the grill down in operative position on the lower frame

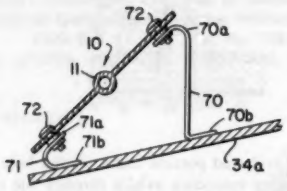
and the tubes are slidable forwardly in the brackets for removal from the manifold, thereby freeing the grill to swinging to upwardly tilted inoperative position facilitating removal of ashes through the open front of the lower frame.

4,161,169

FOCUSSING FLAT PLATE SOLAR COLLECTOR DEVICE

Nathan E. Brussels, and Edwin S. Piasecki, both of Cherry Hill, N.J., assignors to Solar Energy Systems, Inc., Cherry Hill, N.J.

Continuation of Ser. No. 813,637, Jul. 7, 1977, abandoned. This application Jul. 14, 1977, Ser. No. 815,499
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—271 17 Claims



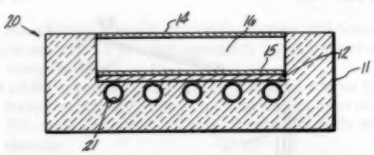
1. A solar energy collector comprising:
a plurality of elongated fin/tube elements each of which includes an elongated tube and at least one fin extending radially outward from and integrally joined with said elongated tube;
inlet and outlet manifold tubes arranged in spaced parallel fashion and having coupling sections extending outwardly from said manifold tubes at spaced intervals;
a rotary hydraulic joint coupled between the ends of each of said elongated tubes and one of said coupling sections for rotatably joining each fin/tube element to said inlet and outlet manifold tubes while providing a leakproof joint; and
solar tracking means for simultaneously rotating said fin/-tube elements to properly orient said fin/tube elements with respect to said solar radiation, said solar tracking means comprising:
eccentrically mounted cam means having a cam surface;
means for rotating said cam means;
a reciprocally mounted rod having a cam follower roller rollingly engaging said cam means;
bias means normally urging said rod in a direction to urge said cam follower roller into engagement with said cam surface;
a projection for each of said fin/tube elements, said projection extending radially outward from said tube; and
coupling means for pivotally coupling the free end of each of said projections to said rod whereby linear movement of said rod simultaneously rotates said fin/tube elements.

4,161,170

SOLAR ENERGY COLLECTION SYSTEM

Bernard H. Nicolaisen, Houston, Tex., assignor to Olin Corporation, New Haven, Conn.

Filed Nov. 17, 1977, Ser. No. 852,255
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—271 15 Claims



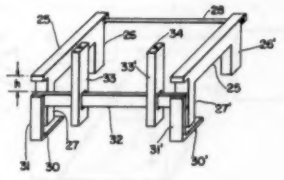
8. A solar energy collection aparatus comprising:
(a) a heat insulative base;
(b) an absorber plate overlying said heat insulative base; said absorber plate capable of absorbing solar radiation and converting at least a portion of said solar radiation into thermal energy;
(c) at least one protective cover spaced above said absorber plate, said protective cover being capable of transmitting solar radiation through to said absorber plate and being impervious to the passage of gases;
(d) at least one gas space being positioned between said absorber plate and a protective cover, said gas space filled with an asymmetric gas which is capable of absorbing thermal re-radiation;
(e) passage means for circulating a heat transfer fluid located in close proximity to said absorber plate;
(f) means for removing said asymmetric gas from said gas space;
(g) means for removing absorbed thermal energy from said asymmetric gas; and
(h) means for returning said asymmetric gas back to said gas space (d) from means (g).

4,161,171

SLIDING FIREPLACE ANDIRONS

Alexander J. Moncrieff-Yeates, 8924 Rhyme Ct., Annandale, Va. 22003

Continuation-in-part of Ser. No. 729,955, Oct. 6, 1976, Pat. No. 4,096,849. This application Oct. 31, 1977, Ser. No. 847,106
Int. Cl.[2] F24B 13/00
U.S. Cl. 126—298 10 Claims



1. In a heating unit of the type which includes a room air recirculating passageway and includes a fire enclosure defined in part by a bed plate, the improvement wherein the bed plate includes spaced stationary grates extending fore and aft of said bed plate and rigidly affixed thereto throughout their fore and aft dimensions to provide integral reinforcement for said bed plate and further including andirons, means mounting said andirons to said unit for side to side movement in a path across the front portion of the fire enclosure at the front of said bed plate, said mounting means comprises a horizontal rod which extends across at least a portion of the front of said enclosure in a position spaced above the bed plate, and said mounting means further comprises a guide rail which extends across at least a portion of the front of said bed plate at approximately the level thereof, and each said andiron includes means registering with said rod and with said guide track to permit movement therealong.

4,161,172

LIFE SUPPORT CHAMBER FOR INFANTS, METHOD AND SYSTEM

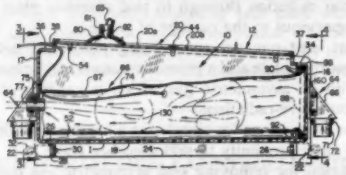
Donald E. Pickering, Reno, Nev., assignor to Airborne Life Support Systems, Inc., Reno, Nev.

Continuation-in-part of Ser. No. 763,312, Jan. 28, 1977, Pat. No. 4,121,571. This application Nov. 23, 1977, Ser. No. 854,328
Int. Cl.[2] A61G 11/00
U.S. Cl. 128—1 B 8 Claims

7. A device for maintaining high-risk infants and other medical patients in a controlled environment while at rest and during medical procedures comprising:
a thin elongated flexible impervious transparent tubular membrane enclosure means adapted to closely enclose the

patient full length while recumbent and being open at its opposite ends,

means for connecting one open end of said membrane enclosure means to a source of life-sustaining gas,



an infra-red heating means disposed adjacent but in spaced relation to said membrane and being directed toward said membrane so as to be operable to provide radiant heat energy to the interior of said membrane.

4,161,173

BLOOD PRESSURE GAUGE

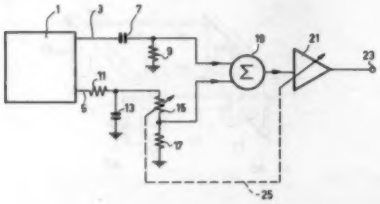
Hans Crestas, Regensdorf, and Edwin Zimmerman, Ostermundigen, both of Switzerland, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 12, 1976, Ser. No. 731,338

Claims priority, application Netherlands, Oct. 17, 1975, 7512187

Int. Cl.[2] A61B *5/02*

U.S. Cl. 128—672 **4 Claims**



1. A device for measuring blood pressure comprising a measuring device for forming an electrical blood pressure signal dependent on the blood pressure value, said electrical blood pressure signal containing alternating current components and a direct current component having a given mutual ratio determined by the subject under test, a circuit arrangement coupled to the output of the measuring device and comprising two separate signal paths and an output terminal wherein the first signal path is designed to selectively pass alternating current in a substantially unvaried manner, the second signal path comprising means for selectively passing the direct current component of the blood pressure signal and an attenuator which attenuates by a given factor the signals guided through said second signal path, a common output for the two signal paths at which a sum signal is produced, and an amplifier responsive to the sum signal and designed to amplify the sum signal by the same factor and to couple same to the output terminal to derive an output signal, the amplifier amplifying the alternating current components of the blood pressure signal relative to the direct current component and passing on the direct current component in a substantially unvaried manner thereby to form at the output terminal an output signal having a different said mutual ratio of alternating to direct current components but the same value of the direct current components.

4,161,174

BIOMEDICAL ELECTRODE ASSEMBLY

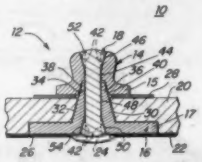
Albert R. Mercuri, 502 South Ave., Weston, Mass. 02193

Continuation-in-part of Ser. No. 815,180, Jul. 13, 1977, abandoned. This application Jul. 7, 1978, Ser. No. 922,723

Int. Cl.[2] A61B *5/04*

U.S. Cl. 128—641 **7 Claims**

1. In an electrode unit having an electrode assembly and a contact pad with an opening in it for receiving the electrode assembly, an improved electrode assembly comprising: a first member disposed on one side of said pad with a stud portion extending axially through the opening in the pad, a first mating area on the stud portion and a first hole therein; a second member disposed on the other side of the pad and having an aperture with a second mating area engaging with said first



mating area of said stud portion and a second hole therein; a connector member extending axially through the opening in the pad and into the first and second holes and securing together said first and second members with pad between them; and conductive means extending through said members to provide a continuous electrical path through the electrode assembly.

4,161,175

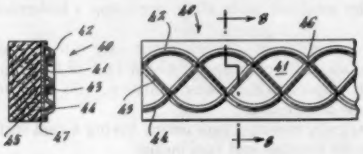
SURGICAL FINGER AND FENCE SPLINTS

Max Bentele, Fairfield, Conn., assignor to Conco Medical Co., Inc., Bridgeport, Conn.

Filed Apr. 29, 1977, Ser. No. 792,311

Int. Cl.[2] A61F *5/04*

U.S. Cl. 128—87 A **14 Claims**



1. A surgical splint comprising a supportive base fabricated of bendable aluminum sheet material, the base having at least one integral stiffening rib comprising a corrugated portion of the bendable aluminum sheet material, the integral stiffening rib disposed in a preselected pattern extending across both the width and length of the base thereby increasing both the widthwise and longitudinal rigidity of the bendable aluminum sheet material, and a foam pad attached to the base on the side opposite the at least one corrugated stiffening rib.

4,161,176

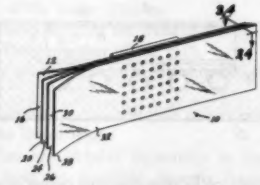
COLOR ADAPTABLE BANDAGE

Frederick E. Harris, II, 944 Palisades Beach Rd., Santa Monica, Calif. 90403, and William H. Pavitt, Jr., Pacific Palisades, Calif., assignors to Frederick Earl Harris, II, Santa Monica, Calif.

Filed Apr. 5, 1977, Ser. No. 784,701

Int. Cl.[2] A61L *15/00*

U.S. Cl. 128—155 **8 Claims**



1. A bandage comprising:

a first patch of opaque film having an adhesive coating on a first side and being non-adhesive on its second side;

at least one additional opaque patch of film, large enough to cover the non-adhesive second side of said first patch of opaque film and removably attached to it, having a first side facing the second side of said first patch of film, and having a second side;

the second sides of said first and additional opaque patches of film having different colors.

4,161,177

CATHETER ATTACHMENT

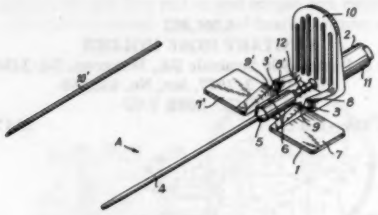
Heinz Fuchs, Melsungen, Fed. Rep. of Germany, assignor to Intermedicat GmbH, Emmenbrucke, Switzerland

Filed Feb. 11, 1977, Ser. No. 769,335

Claims priority, application Switzerland, Feb. 12, 1976, 1725/76

Int. Cl.[2] A61M *5/00*

U.S. Cl. 128—214.4 **17 Claims**



1. A catheter attachment for introducing a flexible catheter into a blood vessel, comprising front and rear attachment sections and means for pivotally connecting said sections, and a flexible catheter mounted in said attachment sections, said rear attachment section including means communicating with said catheter for providing communication between the catheter and a transfusion device, whereby the rear attachment section and the portion of the catheter therein may move with respect to the front attachment section without disturbing the remainder of the catheter in and extending from the front attachment section; and means for limiting angular movement of said attachment sections with respect to one another to about 90°.

4,161,178

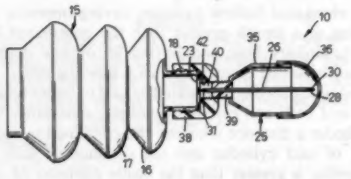
ADDITIVE TRANSFER DEVICE

Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 8, 1977, Ser. No. 858,493

Int. Cl.[2] A61J *1/00*

U.S. Cl. 128—272.3 **14 Claims**



1. An additive transfer device for storing and transferring of a medicament to a solution container having a pierceable closure comprising:

an additive container for storing the medicament to be transferred, said additive container having at least one collapsible wall and defining a neck portion with an opening therein;

a pierceable diaphragm member sealing the opening in the container;

a closure member secured to said neck portion and in contact with a portion of said diaphragm member, said closure member presenting a passage therethrough;

a holder member;

a piercing member having a channel therethrough for the flow of said medicament and a piercing point on both ends thereof, an intermediate portion of said piercing member secured to said holder member;

guide means defined by said holder member, said guide means positioned from said piercing member and terminating inwardly of one end of said piercing member;

a cover member adapted to extend over said holder member and said one end of said piercing member extending beyond said guide means; and

said holder member and said additive container being interconnected to permit movement of said holder member and said piercing member toward said additive container;

so that upon movement of said holder, said piercing member will move in the direction of said pierceable diaphragm through said passage to effect penetration thereof and upon removal of said cover member and penetration of said solution container closure by the other piercing end of said piercing member, the contents of said additive container can be expelled into the solution container by collapsing said wall of said additive container.

4,161,179

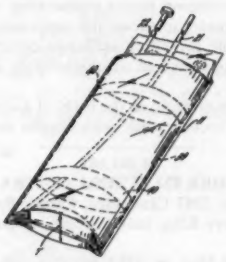
VACUUM BAG FOR WOUND DRAINAGE

Harvey J. Abramson, New York, N.Y., assignor to Metatech Corporation, Northbrook, Ill.

Filed Aug. 8, 1977, Ser. No. 822,564

Int. Cl.[2] A61M *1/00*

U.S. Cl. 128—278 **8 Claims**



1. A vacuum bag assembly for wound drainage comprising, in combination, an outer bag of thin flexible plastic in the form of an initially flat sealed envelope having opposed walls with parallel side edges defining a central axis as well as end edges, the edges being sealed, a sealed catheter connection providing communication to the space within the bag, the bag including first and second springs spaced along the axis, each spring being in the form of a pair of leaf spring elements lying back-to-back with their ends in register with one another and extending from one side edge of the bag to the other, the leaf spring elements being prestressed for bowing mutually outwardly in lenticular relation away from the central axis, the walls of the bag having reinforcement in the form of a flat sleeve formed of relatively stiff flexible sheets interposed between the springs and the walls of the bag so that upon bowing of the springs the walls of the bag are bowed outwardly uniformly over the major portion of the length thereof into a distended pillow of lenticular cross section for development of vacuum at the catheter connection.

4,161,180

SUNTRAP SOLAR RADIATION COLLECTOR

Howard L. Tiger, Eagle Ridge Way, West Orange, N.J. 07052

Filed Jun. 27, 1977, Ser. No. 810,400

Int. Cl.[2] A61H *33/06*

U.S. Cl. 128—372 **11 Claims**

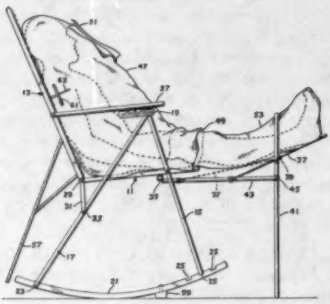
1. A suntrap for exposing simultaneously the user to rays of the sun and shielding said user from wind, the suntrap comprising in combination:

body supporting means for sustaining weight of the user's body upwardly of his knees;

foot support means for sustaining the weight of said user's legs and feet;

upper enveloping means for enclosing said user's body substantially completely from his knee area to and including his head;

said upper enveloping means being provided with means for admitting the rays of the sun so as to impinge directly upon said user's body;



lower enveloping means adapted to enclose said user's feet and legs to approximately the knee area;

said lower enveloping means cooperating with said upper enveloping means to encase the user's entire body in loose fashion, while providing sufficient communication with ambient air to ensure an adequate supply of air for breathing;

said body support being in the form of a chair; and

said chair is a rocking chair with chocks and safety stops.

4,161,181

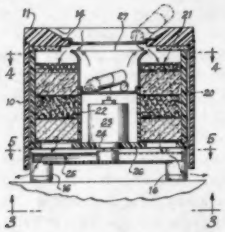
SMOKE FILTERING ASHTRAYS

Robert W. Nicks, 2047 Cambridge, Cardiff-By-The-Sea, Calif. 92007, and Larry King, 1660 S. Amphlett Blvd., San Mateo, Calif. 94402

Filed Mar. 16, 1977, Ser. No. 778,119

Int. Cl.[2] A24F *19/00, 19/10*

U.S. Cl. 131—231 **19 Claims**



1. A combination ashtray and smoke filtering device comprising:

a. A molded ashtray top piece vertically supported by a housing body, said ashtray having depressions for supporting lighted cigarettes and a plurality of perforations through which smoke, ashes and butts may pass;

b. Cupped retaining means for collection of ashes and butts placed vertically below the supported cigarette;

c. A removable cartridge filter placed vertically beneath the ashtray top;

d. Inner and outer vertical walls which closely contain the filter cartridge and enclose the path of smoke and air, the inner wall enclosing a space concentric with the cartridge for containing motor drive means;

e. A horizontal plate enclosing the filter and motor compartments formed by said inner and outer walls, and containing a plurality of perforations for air passage;

f. Direct current electric motor means, the shaft of the motor vertically aligned and connected to the hub of fan means;

g. Horizontally aligned centrifugal fan means parallel to and closely placed to said perforated supporting plate, the central hub of the fan connected to the motor shaft;

h. Exit vents adjacent to the otuer perimeter of said centrifugal fan, wherby said fan driven by said motor will draw air and smoke through the pathway thus defined from the ashtray top through the filter enclosed by the vertical walls through the perforated horizontal plate, and discharge the filtered air at the exit vents;

i. Voltage source providing D-C current to said motor means;

j. Switch means to interrupt the flow of D-C current to said motor means.

4,161,182

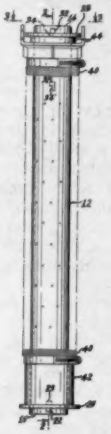
SANITARY HOSE HOLDER

Richard J. Burton, 906 Seminole Rd., Waycross, Ga. 31501

Filed Oct. 3, 1977, Ser. No. 838,660

Int. Cl.[2] B08B *9/02*

U.S. Cl. 134—166 C **10 Claims**



1. A holder for cleaning and storing an elongated sanitary hose extensible between an extended length and a contracted length, said device comprising:

a. an elongated hollow cylinder having opposite ends and being of a length greater than the contracted length of such sanitary hose and having an outside diameter less than the inside diameter of such sanitary hose;

b. a retaining member mounted to said cylinder adjacent one of said ends and extending radially outwardly from said cylinder a distance whereby the combined outside diameter of said cylinder and the distance of said retaining member is greater than the inside diameter of such sanitary hose; and

c. releasable means for locking such hose onto said cylinder adjacent the other of said ends of said cylinder.

4,161,183

VIBRATION SENSITIVE VALVE OPERATING APPARATUS

Edwin X. Berry, 6040 Verner Ave., Sacramento, Calif. 95841

Filed Aug. 4, 1977, Ser. No. 821,689

Int. Cl.[2] F16K *17/36*

U.S. Cl. 137—39 **54 Claims**

1. A valve shut-off device for operating an associated valve

means in response to seismic vibrations of predetermined magnitude, said valve means having an externally operable movable valve mechanism, said device comprising:

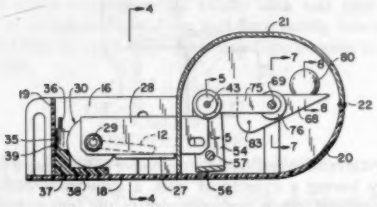
a housing having a base and an opposed pair of side wall members;

spring bias means secured to said housing adjacent a first end thereof;

torque arm means adapted to be coupled to said movable valve mechanism and having a first portion coupled to said spring bias means and a free end;

said spring bias means providing a biasing force tending to rotate said torque arm means about a predetermined first axis in a predetermined angular direction;

latch means for normally preventing rotation of said torque arm means in said predetermined angular direction, said latch means being pivotally mounted to said housing for rotation about a second axis substantially parallel to said first axis and including first bearing means normally engaged with said free end of said torque arm means when said device is armed, and second bearing means; and



triggerable catch means for normally maintaining said latch means in contact with said torque arm means and for enabling said latch means to disengage said torque arm means in response to said seismic vibrations, said triggerable catch means including balance plate means pivotally mounted to said housing for rotation about a third axis substantially parallel to said second axis, trigger arm means coupled to said balance plate means and movable therewith, said trigger arm means having a portion normally engaged with said second bearing means when said device is armed, and trigger means for enabling said balance plate means to rotate said trigger arm means about said third axis to disengage said normally engaged portion of said trigger arm means from said second bearing means in response to said seismic vibrations so that said latch means disengages said torque arm means to enable said spring bias means to rotate said torque arm means in said predetermined angular direction.

4,161,184

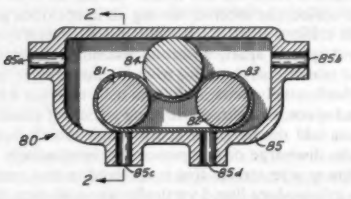
LINEAR ROLLING CONTACT VALVES

Earl W. Traut, 8040 Palm Lake Dr., Orlando, Fla. 32811

Division of Ser. No. 710,797, Aug. 2, 1976, Pat. No. 4,056,292. This application Aug. 5, 1977, Ser. No. 822,093

Int. Cl.[2] G05D *11/03*

U.S. Cl. 137—98 **2 Claims**



1. A linear rolling contact valve comprising:

a valve-body,

said valve-body having a rectangular internal cross section,

two major rollers,

a circular retainer belt,

said retainer belt being in a surrounding relationship to said major rollers, in rolling contact with same, and serving to prevent said major rollers from moving away from each other,

said retainer belt being adjacent an inner side of said valve-body,

a separator roller,

said separator roller being in rolling contact with said retainer belt and with the inner side of said valve-body opposite the first named side,

said separator roller serving to depress said retainer belt between said major rollers to prevent same from moving towards each other,

said major rollers, said retainer belt and said separator roller comprising an assembly which can move inside said valve-body,

the other two inner sides of said valve-body being adjacent the axial ends of said assembly so as to prevent fluid leakage therepast,

two end walls,

said end walls serving to close the ends of said valve-body,

an opening into at least one end portion of said valve body,

flow of fluid through said opening causing linear movement of said assembly with respect to said valve-body.

4,161,185

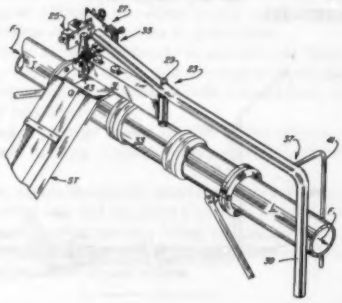
ALIGNMENT CONTROL APPARATUS FOR A SELF-PROPELLED IRRIGATION SYSTEM

James R. McConnell, Colorado Springs, Colo., assignor to Tumac Industries, Inc., Colorado Springs, Colo.

Filed May 12, 1978, Ser. No. 905,277

Int. Cl.[2] B05B *3/12*

U.S. Cl. 137—344 **18 Claims**



6. In a self-propelled irrigation system having a distribution pipe composed of at least first and second pipe segments movably mounted to each other in fluid communication and having at least one self-propelled tower supporting each pipe segment in a substantially horizontal position for movement relative to the other pipe segment, an alignment control apparatus for selectively operating at least one of said self-propelled support towers to maintain said first and second pipe segments in a predetermined alignment, said controlled apparatus comprising:

an elongated actuation arm having first and second end portions,

means for mounting said arm adjacent said first and second pipe segments with said first end portion overlapping part of said first pipe segment and said second end portion overlapping part of second pipe segment, said mounting means including a main support body, means for mounting said main body in a fixed position relative to said first pipe

segment, and means for pivotably mounting said actuation arm to said main body between the end portions of said arm for movement about a substantially vertical, pivotal axis, said mounting means further including means operably connected between said arm and at least one of said first and second pipe segments for biasing a part of said second end portion of said arm against said second pipe segment in an abutting relationship whereby said second end portion of said arm moves with said second pipe segment to pivot said arm about said pivotal axis and move said first end portion of said arm relative to said first pipe segment, said second end portion being movable against the force of said biasing means away from said abutting relationship with said second pipe segment,

valve means for controlling the movement of the self-propelled support tower for said first pipe segment, said valve means including a housing, means for mounting said housing adjacent at least one of said first and second pipe segments, a control member, and means for mounting said control member for movement relative to said valve housing, and,

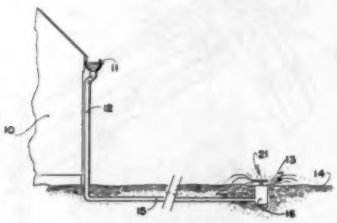
means operably connected between said one end portion of said arm and the control member of said valve means for moving said control member with said one end portion of said arm.

4,161,186

DOWNSPOUT RECEIVER AND WATER DISPENSING DEVICE

Charles L. Sitarz, Box 7, R.R. #2, Dugald, Canada

Filed Oct. 5, 1977, Ser. No. 839,645
Claims priority, application Canada, Oct. 18, 1976, 264003
Int. Cl.[2] E04D *13/08*
U.S. Cl. 137—357 **2 Claims**



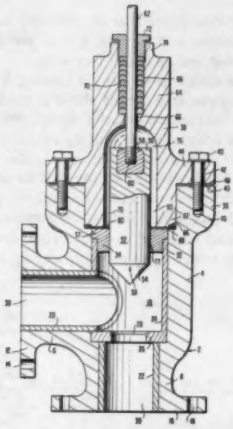
1. A downspout receiver and water dispensing device adapted to be used with a downspout having a lower discharge end and having connecting means between the downspout and said receiver; comprising in combination a rain water receiver operatively connected to the lower discharge end of a downspout, cover means for the upper end of said receiver, said cover means normally closing off said upper end of said receiver, and means mounting said cover means for water egress therepast whereby water pressure within said receiver opens said cover, said receiver being adapted to be buried underground remote from the associated downspout, said receiver consisting of a container having a closed lower end and an open upper end with the open upper end normally being located flush with the surface of the ground, and an aperture formed in the wall of said container adjacent said closed lower end to receive the associated connecting means from the downspout, said cover means comprising a disc normally engaging the open upper end of said receiver.

4,161,187

EROSION RESISTANT CONTROL VALVE

David N. Bauer, 8345 Pine Cir., Hobe Sound, Fla. 33455

Filed Jan. 3, 1978, Ser. No. 866,715
Int. Cl.[2] F16K *27/02*
U.S. Cl. 137—375 **4 Claims**



1. An erosion resistant control valve comprising a steel outer body having a cylindrical inlet, a cylindrical outlet whose longitudinal axis is perpendicular to the longitudinal axis of said inlet, a cylindrical central chamber of diameter greater than the diameter of said outlet joining said inlet to said outlet, a first tubular sleeve lining said inlet, a second tubular sleeve lining said outlet, a third tubular sleeve having a transverse portion defining a valve seat lining said central chamber with said valve seat interposed in the flow passage for erosive fluid through the valve defined by said first, second and third tubular sleeves, a bonnet bolted to said body member opposite to said outlet, an elongated valve plug having a conical end designed to sealingly engage said valve seat, a cylindrical cavity in said bonnet, an actuator rod fixed to said valve plug opposite to said conical end, said rod extending through a packed gland in said bonnet for reciprocation of said valve plug within said cavity into and out of engagement with said valve seat, said first, second and third tubular sleeves and said valve plug being formed entirely of carbide selected from the group consisting of chrome carbide and tungsten carbide, and said first, second and third tubular sleeves being locked in place in said outer body by compression from said outer body.

4,161,188

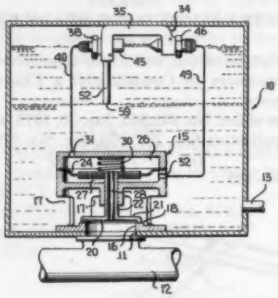
JET TYPE LIQUID LEVEL SENSOR AND SYSTEM

Richard G. Jorgensen, Santa Ana, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Dec. 2, 1977, Ser. No. 856,997
Int. Cl. F15c *1/14*
U.S. Cl. 137—386 **12 Claims**

1. A jet liquid level sensor comprising a body having a nozzle and a receiver, the nozzle having an inlet and a discharge orifice, the receiver having an inlet orifice and an outlet, said orifices being aligned along a substantially horizontal axis and spaced apart, a shroud extending from the nozzle beyond said discharge orifice toward said receiver, said shroud being horizontally separated from said receiver by an unobstructed space, said shroud defining a shut off chamber axially adjacent said discharge orifice through which liquid issuing from the discharge orifice passes in a substantially horizontal direction as a jet stream that is received in said receiver inlet, means to introduce liquid vertically into said shut off chamber at a flow rate insufficient to divert said jet stream from said receiver inlet, said means including a pickup tube extending

from the sensor and having one end communicating laterally with said shut off chamber and having its other end radially spaced from said discharge orifice, and said shroud having



open end means communicating axially with said shut off chamber to introduce liquid from said tank axially into said shut off chamber to prevent the jet stream from flowing to the receiver inlet.

4,161,189

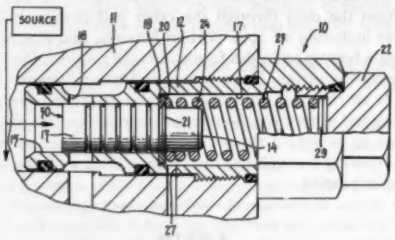
CONTROL VALVE

Otto Mueller, Jr., Detroit, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Continuation of Ser. No. 714,419, Sep. 16, 1976, abandoned. This application Sep. 21, 1977, Ser. No. 835,252

Int. Cl.[2] F16K *15/06*

U.S. Cl. 137—514.7 **4 Claims**



1. A pressure control valve comprising in combination:

a valve body having an inlet and outlet, a chamber having first and second end portions filled with hydraulic fluid, the valve body being further provided with passageway means one end of which is in communication with the chamber intermediate end portions thereof, the passageway means permitting hydraulic fluid to flow into and out of the chamber;

a valve spool mounted within the valve body and shiftable against biasing means into the chamber from a normal closed position through a nominal design operating position to a full open position, the inlet being placed in communication with the outlet as the control member attains the nominal design operating position, the valve spool being provided with an enlarged portion;

first fluid flow restriction means to greatly damp the movement of the valve spool, the restriction means becoming operational only as the valve spool attains the nominal design operating position, the first fluid flow restriction means being formed by the cooperation of the peripheral surface of the enlarged portion of the valve spool and the surface of the chamber immediately adjacent the passageway means.

4,161,190

INTEGRATED THROTTLE FOR THROTTLED AIR REMOVAL IN MULTIPLE-WAY VALVES

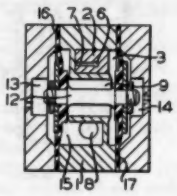
Rudolf Möller, Hanover, and Detlef Opel, Haste, both of Fed. Rep. of Germany, assignors to WABCO Westinghouse GmbH, Hanover, Fed. Rep. of Germany

Filed Sep. 12, 1977, Ser. No. 832,251

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1976, 2645448

Int. Cl.[2] F15B *13/042*

U.S. Cl. 137—596.18 **3 Claims**



1. A multiple-diaphragm supply and exhaust valve having a throttle, comprising:

(a) a valve casing having a cavity therein;

(b) a support port, an exhaust port and a control port communicating with said cavity;

(c) a pair of control pressure chambers;

(d) means including a plurality of diaphragms operable in response to pressure in one of said pair of control pressure chambers to establish a first communication between said supply port and said control port and operable in response to pressure in the other of said part of control pressure chambers to establish a second communication between said control port and said exhaust port;

(e) an arcuately extending channel in said cavity, said channel having one side intersecting said exhaust port and having an adjacent side open to said control port when said second communication is established;

(f) a throttle member disposed in said arcuate channel for sliding movement along said channel to open and close said communication between said exhaust port and said side of said channel;

(g) threaded passage means in said casing communicating with said arcuate channel intersecting said exhaust port; and

(h) screw means threadedly received in said passage means and having one end connected to said throttle member to slide said throttle member along said channel to open or close said exhaust passage depending upon the direction of axial adjustment of said screw.

4,161,191

ADAPTOR FOR CONNECTION TO A FAUCET

Anton Ranger, Bruckmühl, and Alexander Uebel, Gauting, both of Fed. Rep. of Germany, assignors to Knorr-Bremse-Bowles-Fluidics GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 1, 1976, Ser. No. 737,477

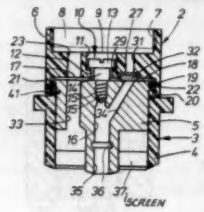
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1975, 2549872; Aug. 2, 1976, 2634721

Int. Cl.[2] F16K *11/06*

U.S. Cl. 137—625.46 **14 Claims**

1. An adapter for connection to an outflow end of a liquid faucet, comprising a central axis, an inlet part and an outlet part disposed in axial alignment with said inlet part relative to said central axis, valve means operatively disposed between said inlet part and said outlet part for rotation about said central axis, said inlet part comprising at one side thereof means for connection to said outflow end of the liquid faucet, said inlet part further comprising at the other side thereof a first plane end face (17) and a plurality of first flow channel means (23 to

27) extending through said inlet part from said one side to said other side of said inlet part, said outlet part comprising a second plane end face (18) facing said first plane end face (17) of said inlet part, and exit port means substantially opposite said second plane end face, said outlet part further comprising a plurality of second flow channel means extending from said second plane end face to said exit port means, means operatively connecting said inlet part and said outlet part to each other for rotating the outlet part relative to the inlet part, said valve means further comprising valve sealing body means



operatively located between said inlet part and said outlet part, said valve sealing body means being subject to the liquid pressure from said faucet through at least one of said first flow channel means whereby said valve sealing body means control the size of the cross-sectional flow area between said at least one first flow channel means and a respective one of said second flow channel means in response to rotation of said outlet part relative to said inlet part, while simultaneously providing the necessary sealing and whereby the ratio of open cross-sectional flow area to closed cross-sectional area is continuously adjustable by said rotation.

4,161,192

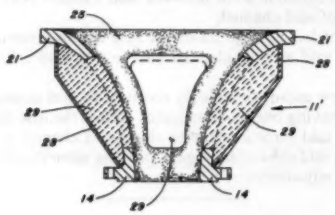
TRANSFER LINE EXCHANGER INLET CONE

Chester D. Porter, Baton Rouge, La., assignor to Allied Chemical Corporation, Morristown, N.J.

Division of Ser. No. 598,107, Jul. 22, 1975, Pat. No. 4,078,292. This application Dec. 19, 1977, Ser. No. 861,799

Int. Cl.[2] F15D *1/02*

U.S. Cl. 138—44 **4 Claims**



1. An inlet cone for passing gases from the outlet side of a hydrocarbon cracking heater to the tube side of a heat exchanger, said inlet cone comprising:

A. a generally conical metal wall connectable around the periphery of its larger end to said heat exchanger and connectable around the periphery of its smaller end to said cracking heater, said generally conical wall having an aperture between its said larger end and its said smaller end;

B. a pressure resistant exterior wall of metal, said pressure resistant exterior wall being spaced from said generally conical wall and having its ends connected to said generally conical wall at points above and below, respectively said smaller end and said larger end of said generally conical wall; and

C. a castable refractory fill, said refractory fill occupying the gap between said pressure resistant exterior wall and said generally conical wall and extending inwardly to form a filled aperture, said refractory fill in said filled aperture being approximately flush with the interior of said generally conical wall.

4,161,193

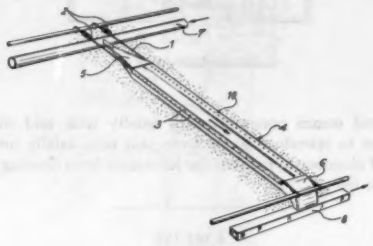
OPEN DUCTS DESIGNED FOR READY DISASSEMBLY AND RE-USE

Aimé Freychet, Grenoble, and André Gouzy, St-Ismier, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 545,565, Jan. 30, 1975, abandoned. This application Sep. 23, 1976, Ser. No. 725,856

Int. Cl.[2] F16L *11/12*

U.S. Cl. 138—103 **4 Claims**



1. An open duct for heating the surface under said duct by circulation of a liquid through the duct, said duct comprising a length of heat transfer material, flexible enough to be rolled and unrolled and incapable of supporting itself, the duct including two end portions having a top, bottom and sides formed of said material, means for introducing fluid into the duct through one end portion, means for receiving fluid flowing from the duct through the other end portion, the duct further including an open portion between said end portions having a bottom and sides formed of said material, the bottom engaging the surface being heated and being flattened by the weight of the fluid, the open portion including means for holding and supporting the sides of said open portion above the surface to be heated along the full length thereof to prevent liquid flowing through said duct from spilling over the sides of the open portion.

4,161,194

REINFORCED SMOOTH FLOW PIPE

James Nyssen, 10045 Kenswood Dr., Chilliwack, British Columbia, Canada

Filed Mar. 13, 1978, Ser. No. 885,659

Int. Cl.[2] F16L *9/16, 9/06*

U.S. Cl. 138—154 **7 Claims**

1. A reinforced, spirally wound pipe having a generally smooth inner wall, comprising

a. an elongated sheet of ductile material formed into joined, adjacent helical convolutions,

b. at least one helical impression forming an integral rib protruding outwardly from the wall of the pipe, said impression having a helical aperture forming a mouth of said impression, said impression further having a divergent depression in the inner wall of the pipe, which has a greater inner cross-sectional dimension than the width of said aperture,

c. a flat, smooth helical portion of the wall of the pipe lo-

cated between adjacent ones of said helical impressions, and

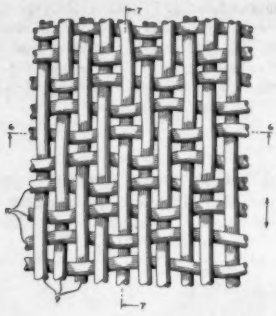
d. a helical reinforcement element lodged in each of said impressions, said element generally conforming to the internal shape of said impression and having a first portion of approximately the same width as said aperture, said first portion being located generally parallel to the inner wall of the pipe, and a second portion extending into the impression.

4,161,195

NON-TWILL PAPERFORMING FABRIC

Mir I. A. Khan, Appleton, Wis., assignor to Albany International Corp., Albany, N.Y.

Filed Feb. 16, 1978, Ser. No. 878,317
Int. Cl.[2] D03D *15/00*; D21F *1/10*
U.S. Cl. 139—383 A **16 Claims**



1. In a papermaking fabric having machine direction and cross machine direction thread systems that interlace with one another, the combination of:

a weave repeat pattern of at least five crossovers for each thread system to form thread knuckles in each thread system on opposite sides of the fabric;

threads in both the machine direction and cross machine direction having interlacings in each weave repeat to be even sided;

thread knuckles of the machine and cross machine directions not exceeding more than three crossovers in length; and

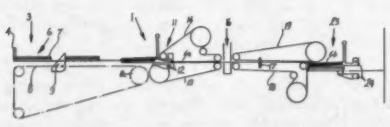
the thread knuckles of both the machine and cross machine direction thread systems having a non-regular twill pattern.

4,161,196

METHOD AND APPARATUS FOR MAKING SPIRAL BINDER NOTE BOOKS

Paul Fabrig, Neuffen, Fed. Rep. of Germany, assignor to Womako-Maschinenkonstruktionen GmbH, Nürtingen, Fed. Rep. of Germany

Filed Nov. 25, 1977, Ser. No. 854,818
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1976, 2653527; Jul. 27, 1977, 2733820
Int. Cl.[2] B21F *15/00*
U.S. Cl. 140—92.4 **15 Claims**



1. In a method of assembling and converting elongated spirals and elongated sheets into pads whose leaves are held together by binders each of which constitutes a portion of a spiral, the steps of

establishing an elongated path between two substantially parallel planes;

assembling a series of successive first stacks, each consisting of said elongated sheets, in a first portion of said path, including positioning said sheets transversely of the longitudinal direction of said path;

breaking up said first stacks into smaller second stacks in a second portion of said path;

applying a row of perforations to a longitudinally extending edge portion of each second stack in a third portion of said path, said rows of perforations extending substantially at right angles to said planes;

collecting several successive second stacks into larger third stacks in a fourth portion of said path;

subdividing successive third stacks into groups of registering pads in a fifth portion of said path, including severing each third stack in at least one plane which is parallel to said first mentioned planes;

aligning the perforations of successive groups of pads in at least one additional portion of said path;

introducing spirals into the aligned perforations of successive groups of pads in a further portion of said path;

maintaining said rows of perforations substantially at right angles to said first mentioned planes in the course of said collecting, subdividing, aligning and introducing steps; and

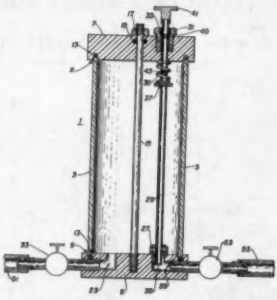
severing successive spirals in still another portion of said path so that each spiral yields several discrete binders, one for each pad of the respective group.

4,161,197

APPARATUS FOR MEASURING AND DISPENSING CHEMICAL

James S. Stevenson, Oakland, Calif., assignor to Terminator Products, Inc., Oakland, Calif.

Filed Dec. 2, 1977, Ser. No. 856,783
Int. Cl.[2] B65B *3/04, 31/00*
U.S. Cl. 141—18 **10 Claims**



1. Apparatus for use in measuring and dispensing chemicals in a closed system for the preparation of a chemical mixture, comprising a measuring container, means for indicating the quantity of contents of such container, an input passageway to said container and a discharge passageway from said container, means for normally closing said discharge passageway to the discharge of contents from said container while exposing said discharge passageway to the upper region of said container, whereby development of a reduced pressure in said discharge passageway will cause a reduction of pressure in said container to enable intake of liquid via said intake passageway, and means for opening said discharge passageway from its normally closed condition while exposing said upper region to atmospheric pressure to enable withdrawal of contents from said container via said discharge passageway.

4,161,198

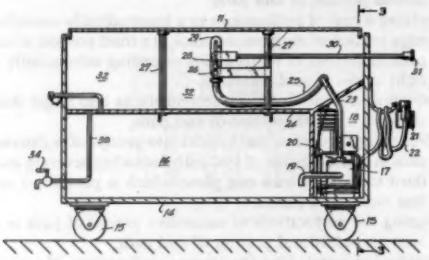
APPARATUS FOR HANDLING WASTES FROM SMALL ANIMAL CAGES

Nickolas J. Sojka, Charlottesville, Va., assignor to University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Division of Ser. No. 587,306, Jun. 16, 1975, Pat. No. 4,009,685. This application Nov. 18, 1976, Ser. No. 743,090

Int. Cl.[2] B67C *7/00*; B65B *3/04*

U.S. Cl. 141—92 **1 Claim**



1. In a machine for washing rectangular trays of the type in which spray nozzles direct a spray of water upwardly against an inverted tray, the spray water and refuse being collected in a first compartment in the machine, the improvementt which comprises

a second compartment in the machine for a supply of spray water,

pump means connected between the second compartment and the spray nozzles,

a third compartment in the machine for a supply of liquid foam composition, and

foam generating means connected to the third compartment for filling the cleaned rectangular trays with foam.

4,161,199

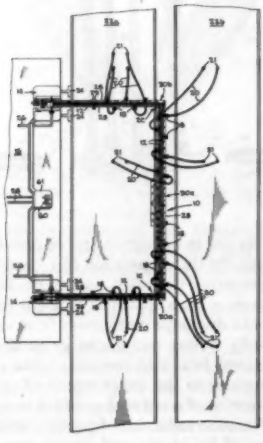
VAPOR RECOVERY FRAME

Frank P. Haley, Upland, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Jul. 28, 1977, Ser. No. 819,740

Int. Cl.[2] B65B *3/18*

U.S. Cl. 141—387 **6 Claims**



1. Apparatus for collecting vapors from a plurality of vapor ducts of a marine tanker and routing said vapors to a central recovery container, wherein said apparatus is mounted on a dock alongside a tanker mooring area, said apparatus comprising:

a generally U-shaped rigid supporting frame including spaced substantially parallel side sections and an elongated central section extending between one pair of ends of said side sections,

a generally U-shaped conduit member mounted to said frame member and having a plurality of openings along the length thereof adjacent said frame side and central sections,

longitudinally spaced support means for said frame and conduit member,

means for pivotally connecting said support means to the other pair of ends of said U-shaped frame side sections for swinging movement thereof about a horizontal axis,

means for pivotally lowering said frame about said axis to a position with said conduit openings in proximity with the vapor ducts of a moored marine tanker,

means for respectively connecting each of said vapor ducts to an adjacent opening in said conduit member,

means adjacent said support means for connecting said conduit member to said central recovery container, and

means for pivotally raising said frame and said conduit member mounted thereon into a stored position on said dock when said apparatus is not in use.

4,161,200

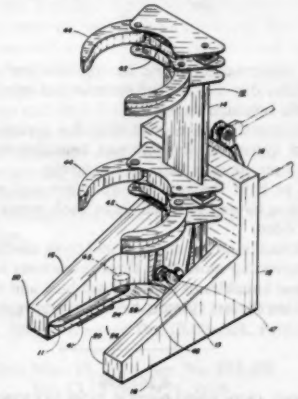
TREE HARVESTER AND BUNCHER

Alva Z. Albright, 6407 Masonic Dr., Alexandria, La. 71301

Filed Jun. 2, 1977, Ser. No. 802,708

Int. Cl.[2] A01G *23/08*

U.S. Cl. 144—34 R **1 Claim**



1. In an improved tree harvester and buncher, having a base structure, with ball-bearing side-tilting means mounted on the back thereof and with a tree-receiving center recess mounted on the front, said base structure being horizontally articulated to an upper structure, and adapted for use with a power train having an auxiliary power supply, said upper structure mounting vertically spaced pairs of tree grapples, and said base structure mounting tree cutting means, controlled power means with sensing and signal means comprising:

(a) four hydraulic cylinders mounted between said upper structure and said tree grapples for opening and closing the respective arms of said grapples;

(b) a fifth hydraulic cylinder mounted between said base structure and the tree cutting means for/actuating it in cutting operation with sensing and signalling means mounted on said fifth hydraulic cylinder for sensing and signalling the position of said tree cutting means in its cutting operation;

(c) a sixth hydraulic cylinder mounted between said ball-

bearing side-tilting means and responsive to the closing of said tree grapples to "float" and permit said tree harvester and buncher to conform to the position of an engaged tree;

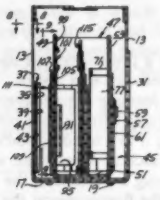
(d) a seventh hydraulic cylinder mounted in said upper structure adjacent said base structure and with rod end forward for its rod to project into said center recess and engage a tree therein, and responsive to said sensing and signalling means to freeze in position at the beginning of said tree cutting means cutting operation to hold the butt of said tree in its original position when cut; and

(e) an eighth hydraulic cylinder mounted between the upper structure and the base structure for pivoting said structures relative to each other, and responsive to said sensing and signalling means to pivot said upper structure rearwardly relatively to said base structure toward the end of said tree cutting means cutting operation.

4,161,201
COMBINATION CARRYING CASE AND ARTICLE ORGANIZER ASSEMBLY

Bess Carp, Detroit, Mich., assignor to Joseph Carp, Detroit, Mich., a part interest

Filed Jun. 28, 1978, Ser. No. 919,819
Int. Cl.[2] A45C 13/02
U.S. Cl. 150—35 **20 Claims**



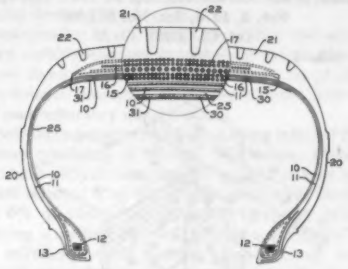
1. In combination with a carrying case having a chamber;
an article organizer assembly removably enclosed within said chamber;
said assembly comprising an upright first side wall;
a bottom wall along one edge hinged thereto as an extension thereof;
an upright second side wall hinged to the other edge of the bottom wall as an extension thereof;
upright end walls on one side hinged to opposite ends of said first side wall as extensions thereof;
a foldable flap extending from the other side of each end wall adapted to overly said second side wall;
snap fasteners on each flap removably secured to a corresponding fastener upon said second side wall;
and a series of article storage pockets upon the interiors of each of said side walls and one end wall and a pocket upon the other end wall, said side, end and bottom walls adapted to lie in a single plane to facilitate selective filling of said pockets.

4,161,202
PUNCTURE SEALING TIRE

Joe A. Powell, Norton; James W. Messerly, Stow, and Ronald L. Shippy, Brunswick, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 18, 1973, Ser. No. 370,656
Int. Cl.[2] B60C 19/12
U.S. Cl. 152—347 **2 Claims**

1. A puncture sealing tubeless tire having a carcass with a tread over the road-engaging portion of the carcass and an air impervious liner bonded to the inner face of the carcass, characterized by additional presence of a thin sheet of closed cell cellular rubber with its cells filled with a gas under pressure which is mainly nitrogen, which sheet is bonded to the inner face of the liner over at least the portion opposite to the tread, and wherein the cellular rubber is coated with a solid fluent

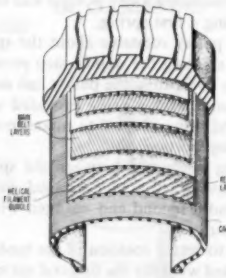


material capable of flowing into punctures under operating conditions.

4,161,203
PNEUMATIC RADIAL TIRE

Yasuo Suzuki, Akigawa; Masaru Abe, Sayama, and Toshiro Tezuka, Higashi-Murayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Apr. 26, 1977, Ser. No. 791,072
Claims priority, application Japan, Apr. 28, 1976, 51/47728
Int. Cl.[2] B60C 9/22, 9/12
U.S. Cl. 152—361 R **5 Claims**



1. In a pneumatic radial tire comprising a carcass composed of cords arranged substantially parallel with a vertical center section through the rotational axis of the tire and a belt interposed between a tread and said carcass and composed of at least two main cord layers whose cords are formed of an inextensible material such as a steel cord and arranged along different directions crossed at a small angle with respect to the circumferential direction of the tire, the improvement comprising at least one rubberized reinforcing layer interposed between said belt and said carcass and containing reinforcing elements spaced apart from each other and embedded therein, said reinforcing element being formed of at least a helically formed filament, said helically formed filament being formed of material having a tensile breaking strength of at least 140 kg/mm^2 and elongation at tensile breaking strength which is at least 1.2 times the smallest elongation at tensile breaking strength of said main cord layers of said belt, and said rubberized reinforcing layer as a whole being extensible and compressible.

4,161,204

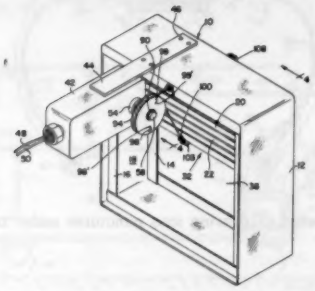
MOTORIZED SMOKE AND FIRE DAMPER

John C. Kurz, 200 Red Lion Rd., Philadelphia, Pa. 19115

Continuation of Ser. No. 833,160, Sep. 14, 1977. This application Feb. 6, 1978, Ser. No. 875,390

Int. Cl.[2] E05F *15/20*

U.S. Cl. 160—1 **8 Claims**



1. In a smoke and fire damper mounted within an air duct of the type including a frame and a blade assembly movable from an open position to define a damper opening within the frame to a closed position, wherein the damper opening is closed, the combination of

a cable tensioning means positioned adjacent the frame to tension a cable,

said cable tensioning means functioning from a first position to a second position,

the said cable tensioning means being positioned exteriorly of the air duct and above the frame,

said cable tensioning means comprising a motor affixed to the frame and adapted to rotate a spindle,

said spindle including a step portion and an engagement for engaging a first spring,

a cable winding pulley rotatable about the spindle and including a hub abutting the spindle step portion,

a bushing loosely overfitting the pulley hub and the spindle step portion, said bushing being provided with a second engagement and being adapted to rotate freely of the hub and the said step portion,

a first coil spring interposed between the spindle and the bushing and having a first end engaged with the spindle engagement and a second end engaged with the second engagement, and

frictional means to retard rotation of the bushing when the spindle is rotated whereby the first coil spring is tensioned sufficiently to continuously engage the spindle step portion and the hub upon operation of the motor to continuously tend to rotate the pulley,

the pulley being adapted to rotate freely of of the spindle and the bushing upon deactivation of the motor.

4,161,205

METHOD AND APPARATUS FOR PLYBONDING CONTROL

Edgar J. Justus, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Jun. 8, 1977, Ser. No. 804,516

Int. Cl.[2] D21F *1/06, 1/08, 11/08*

U.S. Cl. 162—133 **5 Claims**

1. A mechanism for making a multilayered fibrous web comprising in combination:

a felt for carrying a first web layer on its lower surface to a bonding station;

a perforate web forming cylinder forming a second web layer on the surface with said felt wrapping a portion of the upper surface of the cylinder for laying the first layer on the second layer at said bonding station;

means delivering a slurry of stock to the cylinder on the uprunning side for forming a web thereon;

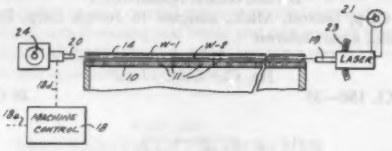
means forming a vacuum within the cylinder for dewatering the web layer formed on the cylinder and aiding in bonding the web layers;

means for forming a water bead to a nip between layers at said bonding station where the first layer joins the second;

a power beam generator projecting a beam into the nip to detect said water bead;

a beam receiver sensing the energy of the beam passing through the nip and emitting an output signal as a function of the size of the water bead depending on the receiver output signal; and

control means connected to the mechanism to vary an operating factor of the mechanism for changing the size of said bead, and said control means connected to said receiver and receiving the output signal thereof and connected to the mechanism for changing the size of said bead to maintain the bead at a predetermined size for obtaining optimum bonding between said layers.



5. The method of forming a multilayered fibrous web comprising the steps of laying a first web layer on the lower surface of a felt and carrying it to a bonding station, forming a second web layer on the surface of a perforate web forming cylinder with said felt wrapping a portion of the upper surface of the cylinder for laying the first layer on the second layer at said bonding station; delivering a slurry of stock to the cylinder on the uprunning side for forming a web thereon, forming a vacuum within the cylinder for dewatering the web layer formed on the cylinder and aiding and bonding the web layers, forming a water bead at a nip between layers at said bonding station where the first layer joins the second layer, projecting a beam from a power beam generator into the nip to detect said water bead, sensing the energy of the beam passing through the nip with a beam receiver which emits an output signal which varies as a function of the size of the water bead and controlling the operating conditions of the bonding station depending upon the receiver output signal to maintain the bead at a predetermined size for optimum bonding between said layers.

4,161,206

ELECTROMAGNETIC CASTING APPARATUS AND PROCESS

John C. Yarwood, Madison; Ik Y. Yun, Orange; Derek E. Tyler, Cheshire, and Peter J. Kindlmann, Northford, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 15, 1978, Ser. No. 905,889

Int. Cl.[2] B22D *11/01, 27/02*

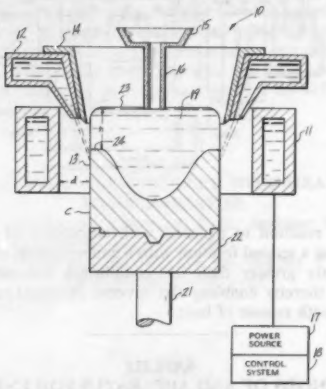
U.S. Cl. 164—49 **18 Claims**

1. In a process for casting metals comprising:

electromagnetically containing and forming molten metal into a desired shape, said electromagnetic containing and forming including the steps of providing an inductor for applying a magnetic field to said molten metal; applying an alternating current to said inductor to generate said magnetic field, said inductor in operation being spaced from said molten metal by a gap extending from the surface of the molten metal to the opposing surface of the inductor; and minimizing variations in said gap during said casting process by electrically sensing variations in said gap and responsive thereto controlling the magnitude of

said current applied to said inductor so as to minimize said gap variations; the improvement wherein said step of electrically sensing variations in said gap comprises:

determining an electrical parameter corresponding about to the reactance or inductance of said inductor which varies with the magnitude of said gap and responsive to the determining of said electrical parameter, generating an



error signal the magnitude of which is a function of the difference between the value of said determined electrical parameter and a predetermined value thereof; and

wherein said step of controlling the magnitude of said current comprises:

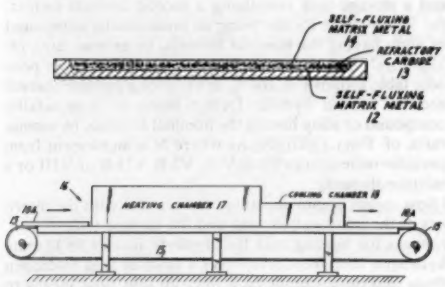
controlling the current applied to said inductor in response to said error signal so as to drive said error signal towards zero.

4,161,207

PRODUCTION OF CARBIDE LADEN CONSUMABLES IN A GRAPHITE MOLD

Jean L. Fluckiger, Sao Paulo, Brazil, and René Wasserman, Echichens, Switzerland, assignors to Eutectic Corporation, Flushing, N.Y.

Continuation of Ser. No. 690,921, May 28, 1976, abandoned. This application Jan. 19, 1978, Ser. No. 870,767
Int. Cl.[2] B22D *23/06, 25/00*
U.S. Cl. 164—80 **7 Claims**



1. A method of producing a carbide laden consumable in the form of a composite rod which comprises,

providing a graphite mold having at least one elongated U-shaped groove therein,

said at least one groove containing a charge of fusible ingredients comprising a first layer of powdered self-fluxing matrix metal alloy at the bottom of said groove, a second layer of particulate refractory metal carbide on top of said first layer and a third layer of said matrix metal alloy on top of said second layer, said first layer of said powdered matrix metal constituting about 25% to 50% of the total combined first and third layers, with the third layer making up the balance of the total combined first and third layers.

the composition of said matrix metal alloy and said refractory carbide together in said mold ranging by weight from about 80% to 30% of said matrix metal alloy and the balance consisting essentially of about 20% to 70% of said refractory metal carbide,

said self-fluxing matrix metal alloy being selected from the group consisting of Ni-base, Ni-Cu-base, Fe-base and Co-base alloys containing by weight at least one element selected from the group consisting of about 0.1% to 6% of silicon and about 0.1% to 5% boron and having a melting point ranging up to about 1370° C.,

said refractory metal carbide being selected from the group consisting of carbides of W, Mo, Cr, Zr, Ti, Hf, Nb, Ta, V, B and Si and mixtures of at least two of said carbides,

passing said graphite mold through a furnace having a heating zone maintained at a temperature above the melting point of said matrix alloy,

said furnace having a cooling zone immediately after said heating zone, the atmosphere in said furnace being reducing,

causing said matrix alloy to melt and infiltrate the interstices in said carbide layer,

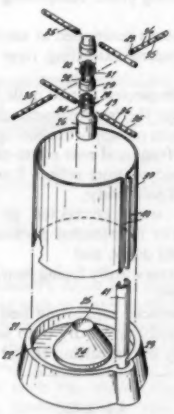
and passing said graphite mold into said cooling zone immediately after said heating zone to solidify said matrix alloy and inhibit segregation of said refractory carbide to thereby produce a composite rod characterized by improved quality and improved strength.

4,161,208

INVESTMENT CASTING APPARATUS

Abraham J. Cooper, 348 Country Club La., Pomona, N.Y. 10970

Filed Dec. 5, 1977, Ser. No. 857,113
Int. Cl.[2] B22C *7/02*
U.S. Cl. 164—244 **5 Claims**



1. A casting assembly comprising a resilient base, a first recess in the top of said base, a second recess in the base laterally disposed with respect to the first recess and in communication therewith, a sprue forming structure of heat liquifying plastic releasably carried at one end within the base recess and extending upwardly therefrom, said sprue forming structure comprising, coupled, axially bored, plug and socket members and outwardly extending hollow tubes of heat liquifying plastic carried by the plug and socket members in communication with the axial bore, said tubes having openings therein in communication with the interior of the tubes, means to connect

heat liquifying models to the tubes, an elongated split ring having outwardly disposed flanged portions on the free ends of the ring, said flanged portions being receivable within said second recess when said ring is received within said first recess at one end said ring extending upwardly from said base around the sprue forming structure and spaced therefrom, and an elongated split pin adapted to be slipped over said flanged portions and within said second recess

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4,161,209

APPARATUS FOR HANDLING THE STARTING STRAND OF A METAL STRAND CASTING PLANT

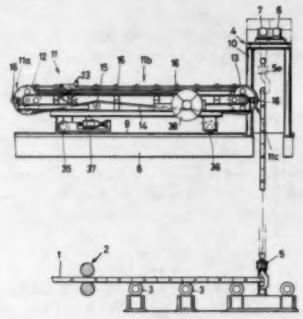
Siegfried Dangeleit, Krefeld, and Dieter Kothe, Moers, both of Fed. Rep. of Germany, assignors to DEMAG Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Aug. 18, 1977, Ser. No. 825,534

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1976, 2637824

Int. Cl.[2] B22D *11/08*

U.S. Cl. 164—446 **10 Claims**



1. A dolly for supporting, guiding and positioning a starting strand of a metal casting plant, comprising

(a) a dolly body;

(b) guide pulley means positioned at each end of said body;

(c) traction belt means extending over said guide pulley means;

(d) power means connected to said pulley means for driving said pulley means; the improvement characterized by

(e) a plurality of pairs of support rollers spaced along the top surface and the front and rear edges of said body;

(f) said pairs of said support rollers forming parallel rows longitudinally of said body;

(g) a retractible carrier connected to said traction belt means, said carrier in extended position engaging a starting strand on said dolly; and

(h) forwardly and rearwardly facing bearing surfaces on said retractible carrier;

(i) said bearing surfaces supporting and guiding a starting strand on said dolly upwardly onto said dolly, and over and downwardly into a casting strand path.

4,161,210

TEMPERATURE INCREASE SYSTEM

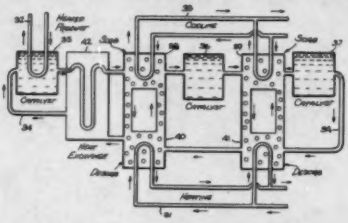
Allen F. Reid, 10 Melody La., Geneseo, N.Y. 14454, and Albert H. Halff, 3636 Lemmon Ave., Dallas, Tex. 75219

Filed Jan. 10, 1975, Ser. No. 540,214

Int. Cl.[2] F28D *15/00*

U.S. Cl. 165—1 **10 Claims**

1. The method of increasing the temperature of heat content of a first fluid or solid by accumulating heat in an endothermic chemical reaction from a second fluid or solid at lower temperatures T_1 and releasing the heat at temperatures T_2 higher than temperatures T_1 in the reverse exothermic chemical reaction to heat the first fluid or solid and thereby increase its temperature or heat content, there being a partial separation of reactants from products of the chemical reaction providing one fraction with a concentration of reactants significantly greater than the equilibrium concentration of reactants thereby enabling the



chemical reaction to proceed with absorption of heat, and there being a second fraction with a concentration of products significantly greater than the equilibrium concentration of products thereby enabling the reverse chemical reaction to proceed with release of heat.

4,161,211

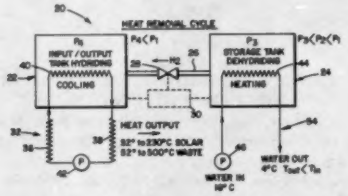
METHODS OF AND APPARATUS FOR ENERGY STORAGE AND UTILIZATION

Thomas E. Duffy, and David A. Rohy, both of San Diego, Calif., assignors to International Harvester Company, Chicago, Ill.

Continuation-in-part of Ser. No. 591,831, Jun. 30, 1975. This application Dec. 23, 1976, Ser. No. 753,821

Int. Cl.[2] F28D *15/00*

U.S. Cl. 165—1 **20 Claims**



1. Thermal energy utilization apparatus comprising:

(a) an input-output tank containing a first hydride former and a storage tank containing a second hydride former, the first hydride former being an intermetallic compound or alloy having the nominal formula, by atomic ratio, of: $Mg_{0.8-0.9}Ni_{0-0.1}M_{0-0.1}$ where M is an element from periodic table groups I-B, III-A, or IV-A or a mixture thereof and the second hydride former being an intermetallic compound or alloy having the nominal formula, by atomic ratio, of: $Fe_{0.1-1.0}Ti_{1.0}N_{0-0.9}$ where N is an element from periodic table groups IV-B,V-B, VI-B, VII-B or VIII or a mixture thereof;

(b) flow means communicating between and with the interiors of the input-output tank and the storage tank;

(c) means for heating said first hydride former to liberate hydrogen therefrom and effect a flow of said hydrogen from said input-output tank through said flow means to said storage tank;

(d) means for removing heat from said second hydride former to effect the association of said hydrogen therewith;

(e) means for heating the second hydride former to effect a dissociation of hydrogen therefrom, a flow of said hydrogen from said storage tank to said input-output tank, and an exothermic, heat producing association of said hydrogen with the hydride former in said input-output tank; and

(f) means for recovering and utilizing heat liberated by the association of the hydrogen with the first hydride former.

6. A method of utilizing energy which comprises the steps

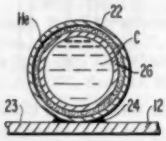
of: effecting a flow of hydrogen into contact with a hydridable metallic material having the nominal formula, by atomic ratio, of $Mg_{0.8-0.9}Ni_{0-0.1}M_{0-0.1}$ where M is an element from periodic table groups I-B, III-A, or IV-A or a mixture thereof or the nominal formula, by atomic ratio, of: $Fe_{0.1-1.0}Ti_{1.0}N_{0-0.9}$ where N is an element from periodic table groups IV-B, V-B, VII-B, or VIII or a mixture thereof to form a hydride by the association of said hydrogen and said metallic material; circulating a fluid heat transfer medium into heat transfer relationship with the hydrided metallic material to desorb hydrogen therefrom while concomitantly cooling said fluid; and thereafter utilizing said fluid as a cooling medium for refrigeration and/or space air conditioning.

4,161,212

PNEUMATICALLY CONTROLLED WIDE HEAT LOAD SPACE RADIATOR

Stanley J. Hightower, Lakewood, Colo., assignor to Martin Marietta Corporation, Rockville, Md.

Filed Jan. 28, 1977, Ser. No. 764,564
Int. Cl.[2] F28F *13/00, 1/22*
U.S. Cl. 165—96 **7 Claims**



1. A pneumatically controlled, wide heat load, space radiator assembly for a spacecraft, earth satellite, or the like, said radiator assembly comprising in combination:

a heat radiator mounted to the spacecraft for thermal radiation to space, said heat radiator having a face,

at least one tube array mounted to the face of the heat radiator in thermal conducting fashion, said array comprising concentric, radially spaced, longitudinally extending inner and outer heat conductive tubes,

means defining a sealed annular gap between said tubes of a given longitudinal extent thereof,

a coolant media within said inner heat conductive tube in thermal contact with said inner heat conductive tube and constituting the waste heat load for said space radiator assembly, and

means for selectively supplying a gas under pressure to said sealed annular gap between said concentric tubes or for venting said annular gap to space to vary the thermal impedance between said inner and outer heat conductive tubes and modulate the waste heat rejection rate of said spacecraft radiator assembly.

4,161,213

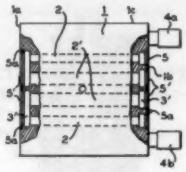
COOLING CAPSULE FOR A THYRISTOR

Wilfried Heide, Altenberg; Friedrich Muller; Klaus Otto, both of Nuremberg, and Tibor Salanki, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 18, 1977, Ser. No. 788,595
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1976, 2617776
Int. Cl.[2] F28F *9/22*
U.S. Cl. 165—168 **2 Claims**

1. A cooling capsule for a thyristor comprising:

a core of metal having first and second opposing surfaces formed as heat transfer surfaces and third and fourth opposing surfaces transverse to said first and second surfaces, said metal core having a flow path running therethrough and an inlet opening and outlet opening connected to the flow path, said flow path comprising: first and second pluralities of bores, said first plurality of bores extending through said core adjacent said first surface and between said third and fourth surfaces, said second plurality of bores extending through said core adjacent said second surface and between said third and fourth surfaces, and said first plurality of bores being spaced from said second plurality of bores; and first and second pluralities of recesses in said third and fourth surfaces each of said



first plurality of recesses connecting a pair of bores each of which is from the same plurality of bores and each of said second plurality of recesses connecting a pair of bores each of which is from a different plurality of bores;

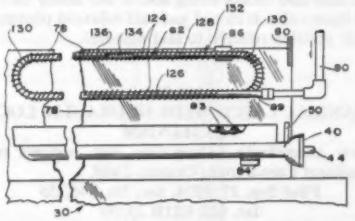
and plate-shaped metallic members, each member arranged to cover in a coolant-tight manner one of said recesses and each member being joined to its associated recess by means of an electron-beam weld.

4,161,214

LAUNDRY HOT WATER SUPPLY COIL ASSEMBLY

Ion L. Wendel, St. Petersburg, Fla., assignor to James L. Lowe, St. Petersburg, Fla.

Continuation of Ser. No. 740,301, Nov. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 660,323, Feb. 23, 1976, and Ser. No. 732,488, Oct. 14, 1976. This application Aug. 10, 1978, Ser. No. 932,435
Int. Cl.[2] F28F *1/42*
U.S. Cl. 165—172 **5 Claims**



1. For use in a laundry dryer and clothes washer combination; a coil for liquid such as water to be inserted in the heating unit of a dryer to derive heat therefrom to heat water flowing through the coil; the coil comprising, fluid inlet and outlet ports interconnected by a plurality of generally straight and spaced apart runs, each run having opposite ends interconnected by returns connecting said runs in series with each other between said inlet and said outlet ports, said runs including upper and lower sets of runs, the runs of each set lying generally in a common plane with the other runs of the set and the planes of the two sets of runs being generally parallel and spaced from each other; said runs having formed internally throughout the length thereof a continuous spiral groove for conveying liquid such as water through the coil, and wherein said runs are formed from metallic tubing and wherein the outer surface of the runs are configured in a shape as a spiral protrusion complementary to the spiral groove of the runs and extending coextensively and continuously with the spiral groove in the same direction as the spiral groove.

4,161,215

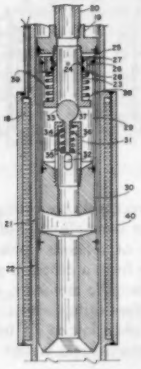
SOLENOID OPERATED TUBING SAFETY VALVE

Henry A. Bourne, Jr., Ponca City, Okla.; Louis M. Ayers, Houston, Tex., and Minor R. Wiseman, Newkirk, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation of Ser. No. 617,116, Sep. 26, 1975, abandoned. This application Nov. 7, 1977, Ser. No. 848,800

Int. Cl.[2] E21B *43/12*

U.S. Cl. 166—65 M **15 Claims**



11. A safety valve for a tubing string comprising:

(a) a tubing sub adapted to be used as a part of said tubing string;

(b) a solenoid coil wound around a portion of said tubing sub;

(c) a mandrel adapted for attachment to said tubing string and having main valve seat means thereon;

(d) a solenoid plunger movable from a lower to an upper position in response to operation of said solenoid coil;

(e) main valve means responsive to movement of said solenoid plunger; and

(f) pressure equalizing valve means adapted to allow flow of fluid into said tubing string above said safety valve when said main valve is closed and said solenoid plunger is in a lower position relative to said mandrel.

4,161,216

MECHANICAL LATCH WITH HYDRAULIC LOCKING MECHANISM

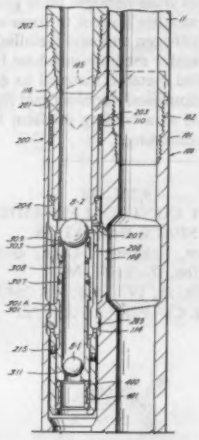
Amareswar Amancharla, League City, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Sep. 27, 1978, Ser. No. 946,235

Int. Cl.[2] E21B *23/00*

U.S. Cl. 166—193 **68 Claims**

1. An apparatus for selective mechanically activated latching and hydraulically activated locking and unlocking of one end of a tubular string within an anchor assembly in a subterranean bore, said anchor assembly defining first co-engaging means thereon for selective latching and locking of said tubular string with said anchor assembly, said apparatus comprising: a housing: second co-engaging means for complimentary operation with said first co-engaging means; longitudinally shiftable sleeve means initially secured interior of and to at least one of said housing and said second co-engaging means, said sleeve means initially being positioned with respect to said second co-engaging means whereby said second co-engaging means may be selectively and repeatably latched with respect to said first co-engaging means; first seat means for sealing receipt of a first sealing element whereby said sleeve means is converted to an hydraulically responsive piston tc longitudinally shift one of said sleeve means and said second co-engaging means relative to the other of said sleeve means and said second co-engaging means to a first position whereby said first relative shifting to said first position locks said second co-engaging means with said first co-engaging means; and second seat means for sealing receipt of a second sealing element whereby said sleeve means is converted to a piston to longitudinally shift one of said sleeve means and said second co-engaging



means relative to the other of said sleeve means and said second co-engaging means to a second position whereby said second relative shifting to said second position unlocks said first and said second co-engaging means.

4,161,217

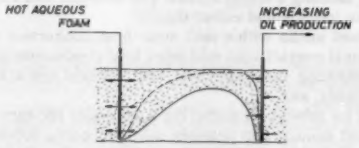
HOT WATER FOAM OIL PRODUCTION PROCESS

Richard E. Dilgren, Houston, and Kenneth B. Owens, Spring, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 8, 1978, Ser. No. 903,469

Int. Cl.[2] E21B *43/24*

U.S. Cl. 166—252 **16 Claims**



1. An oil recovery process which comprises:

arranging well conduits for injecting and producing fluid at horizontally separated locations within a subterranean interval which contains at least one oil-bearing layer which, at the reservoir temperature, has an absolute permeability of at least about 0.5 darcy and contains an oil having a viscosity of at least about 100 centipoises,

flowing a relatively non-viscous fluid through the reservoir interval and heating at least subsequently inflowed portions of that fluid hot enough to significantly increase the mobility of the reservoir oil,

controlling the rates of heating and injecting the relatively non-viscous fluid and the rate of producing fluid from the reservoir interval so that (a) a heated channel of preferential permeability is formed within or near the oil-bearing layer and (b) the pressure gradient required for flowing the heated, relatively non-viscous fluid through the preferentially permeable channel is reduced or kept low by the thermal mobilization of any reservoir fluid encountered within that channel,

changing the composition of the fluid being flowed through the reservoir interval by including as at least a mobility-

controlling proportion of that fluid a relatively viscous hot water foam that consists essentially of aqueous liquid, noncondensable gas and surfactant and is hot enough to significantly increase the mobility of the reservoir oil,

controlling the composition of the hot water foam being injected so that, in contact with the reservoir rocks and fluids within the reservoir, the foam has a mobility low enough so that flowing it through the heated, preferentially permeable channel requires a pressure gradient exceeding that required to cause an equivalent rate of flow of the heated relatively non-viscous fluid through that channel without requiring an injection pressure that exceeds the fracturing pressure of the reservoir, and

recovering oil from fluid produced from the reservoir interval while adjusting the composition and temperature of the total amount of fluid being flowed through the reservoir interval so that the produced fluid contains heated oil and a significant portion of fluid flows through portions of the reservoir interval other than those within the channel of preferential permeability.

4,161,218

HIGH CONFORMANCE ENHANCED OIL RECOVERY PROCESS

James E. Varnon; Vernon H. Schievelbein; Mohan V. Kudchadker, all of Houston, and Lawrence E. Whittington, Katy, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 22, 1977, Ser. No. 863,504
Int. Cl.[2] E21B *43/22*
U.S. Cl. 166—269 **18 Claims**

1. A method of recoverying petroleum from a subterranean, petroleum-containing formation, said formation containing water having a salinity of from 5000 to 150,000 parts per million total dissolved solids, said formation containing at least two distinct petroleum-containing strata, the permeability of at least one of said strata being at least 50 percent greater than the permeability of the other stratum, said formation being penetrated by at least one injection well and by at least one production well, both wells being in fluid communication with subtantially all of the strata and said formation, comprising

(a) injecting a first aqueous oil-displacing fluid into the formation via the injection well, said fluid passing through at least one of the more permeable strata of said formation and displacing oil therein toward the production well, from which it is recovered to the surface of the earth;

(b) after said first aqueous oil displacing fluid has passed through at least one of said more permeable strata to the production well, discontinuing injecting said fluid and injecting into said stratum an aqueous fluid containing an emulsifying surfactant mixture comprising (1) from about 0.5 to about 4.0 percent by weight of an alkylpolyalkoxyalkylene sulfonate or alkylarylpolyalkoxyalkylene sulfonate having the following formula:

$$R—(OR')_n—R''SO_3M$$

wherein R is an alkyl group, linear or branched, having from 9 to 25 carbon atoms or an alkylaryl group selected from the group consisting of benzene, toluene or xylene having attached thereto at least one alkyl group, linear or branched, said alkyl group containing from 9 to 15 carbon atoms; R′ is ethylene or a mixture of ethylene and higher molecular weight alkylene with relatively more ethylene than higher molecular weight alkylene; n is a number from 2 to 10; R″ is ethylene, propylene, hydroxy propylene, or butylene and M is a monovalent cation selected from the group consisting of sodium, potassium, lithium and ammonium, and (2) from 0.01 to 10.0 percent by weight of an organic sulfonate which is at least partially water soluble, selected from the group consisting of alkyl sulfonates containing from 8 to 20 carbon atoms, alkylaryl sulfonates containing from 8 to 20 carbon atoms in the alkyl chain, petroleum sulfonate having average equivalent weight from 300 to 500, said emulsifying surfactants forming a macro-emulsion in the flow channels of the most permeable strata of the formation, thereby reducing the permeability of the strata invaded by the emulsifying fluid; and

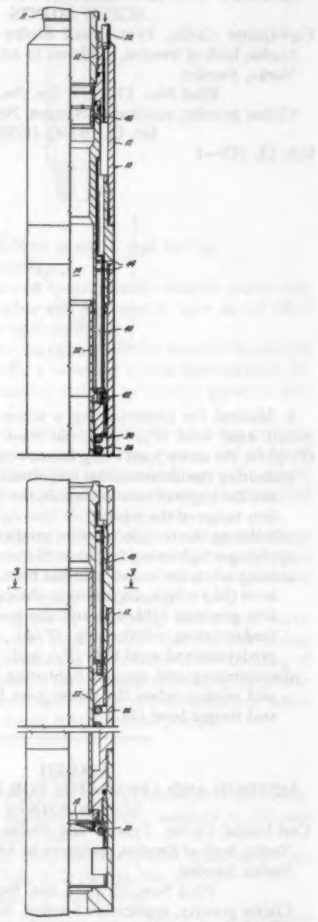
(c) thereafter injecting a second aqueous oil displacing fluid into the formation, said oil displacing fluid invading at least one strata not invaded by the oil displacing fluid of step (a) above, displacing petroleum therein toward the production well where it is recovered to the surface of the earth.

4,161,219

PISTON ACTUATED WELL SAFETY VALVE

Ronald E. Pringle, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Feb. 27, 1978, Ser. No. 881,484
Int. Cl.[2] E21B *43/12*
U.S. Cl. 166—324 **5 Claims**



1. In a well safety valve for controlling the fluid flow through a well conduit and including a tubular housing and a valve closure member moving between open and closed positions, a longitudinally tubular member telescopically movable in the housing for controlling the movement of the valve closure member, means for biasing the tubular member in a first direction for causing the valve closure member to move to the closed position, the improvement in means for moving the

tubular member in a second direction for opening the valve closure member comprising,

at least one piston telescopically movable within and having its longitudinal axis within the wall of the housing and outside of the tubular member, said piston contacting said tubular member, one side of the piston being in communication with hydraulic fluid extending to the well surface for actuating said member in the second direction to open said valve closure member, the second side of the piston being exposed to fluid pressure in the valve housing tending to move the piston in the first direction, and

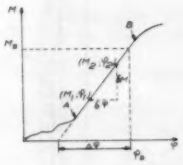
said piston having a cross-sectional width less than the thickness of the housing for reducing the hydrostatic force of the hydraulic fluid acting on the one side of the piston whereby the valve may be used at greater depths in the well.

4,161,220

METHOD AND APPARATUS FOR PRETENSIONING SCREW JOINTS

Carl-Gustaf Carlin, Tyresö, and Stefan M. B. Skyllermark, Nacka, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Nov. 17, 1977, Ser. No. 852,600
Claims priority, application Sweden, Nov. 22, 1976, 7613005
Int. Cl.[2] B23Q *19/06*
U.S. Cl. 173—1 **4 Claims**



1. Method for pretensioning a screw joint to a predetermined axial load (F_p), the axial load/rotation relationship (F/ϕ) for the screw joint being known, comprising the steps of:

measuring the instantaneous magnitude of the applied torque and the angle of rotation within the linear elastic deformation range of the joint,

calculating the torque/rotation gradient ($dM/d\phi$),

applying a tightening torque to the screw joint,

sensing when the screw joint has been tightened to a torque level (M_s) which, according to the calculated torque/rotation gradient ($dM/d\phi$) and the previously known axial load/rotation relationship (F/ϕ), corresponds to said predetermined axial load (F_p), and

discontinuing said applied tightening torque responsive to said sensing when the screw joint has been tightened to said torque level (M_s).

4,161,221

METHOD AND APPARATUS FOR PRETENSIONING SCREW JOINTS

Carl-Gustaf Carlin, Tyresö, and Stefan M. B. Skyllermark, Nacka, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Nov. 17, 1977, Ser. No. 852,286
Claims priority, application Sweden, Nov. 22, 1976, 7613006
Int. Cl.[2] B23Q *19/06*
U.S. Cl. 173—1 **10 Claims**

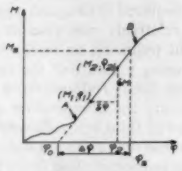
1. Method for pretensioning a screw joint to a predetermined axial load (F_p), the tension/rotation relationship

$$\left(\frac{F}{\phi}\right)$$

of the screw joint being known, comprising the steps of:

determining the torque/rotation relationship $M(\phi)$ during the linear, elastic deformation sequence of the tightening process,

calculating by extrapolation of said torque/rotation relationship $M(\phi)$ a theoretical, tensionless angular position (ϕ_0) of the screw joint,



applying a tightening torque to the screw joint,

sensing when the screw joint has been rotated with relation to said theoretical, tensionless angular position (ϕ_0) an angular interval ($\Delta\phi$) which according to said known tension/rotation relationship

$$\left(\frac{F}{\phi}\right)$$

corresponds to said predetermined axial load (F_p), and then

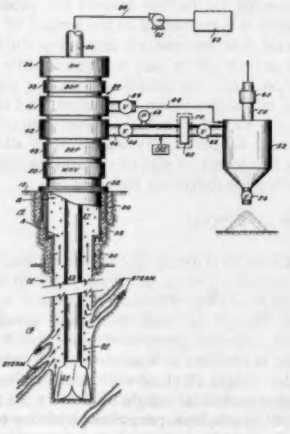
discontinuing said tightening torque application responsive to said sensing when the screw joint has been rotated through said angular interval ($\Delta\phi$).

4,161,222

METHOD FOR REDUCING CONTAMINANT EMISSIONS IN GAS DRILLING OPERATIONS

David S. Pye, Brea, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed Jun. 1, 1978, Ser. No. 911,423
Int. Cl.[2] E21B *21/00*
U.S. Cl. 175—66 **17 Claims**



1. A method for drilling a borehole through a steam-bearing subterranean formation, comprising the steps of:

(a) rotating a drill bit in engagement with the bottom of said borehole thereby drilling said borehole and producing particulate drilling cuttings;

(b) flowing a gaseous drilling fluid from the earth surface downwardly through a first fluid pathway to said drill bit;

(c) flowing from the bottom of said borehole upwardly through a second fluid pathway to the earth surface a contaminant-bearing gas comprised of said gaseous drilling fluid, said drilling cuttings and steam produced from the steam-bearing formation being penetrated, said second fluid pathway having a minimum velocity point at a first location wherein the velocity of said contaminant-bearing gas is a minimum and a maximum velocity point at a second location above said first location wherein the velocity of said contaminant-bearing gas is a maximum;

(d) imposing a preselected surface back pressure on said contaminant-bearing gas, said surface back pressure being an amount effective to reduce the velocity of said contaminant-bearing gas at said maximum velocity point to a value less than the velocity at which substantial erosion of well hardware and substantial diminution of the drilling cuttings occurs and to control the velocity of said contaminant-bearing gas at said minimum velocity point at a value sufficient to transport said drilling cuttings through said borehole, whereby the erosion of said well hardware is reduced and said drilling cuttings arrive at the earth surface as relatively large, easily separated particles; and

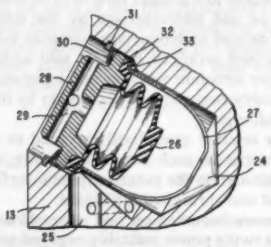
(e) venting at least a portion of said contaminant-bearing gas to the atomsphere.

4,161,223

PRESSURE RELIEF VALVE FOR ROCK BITS

Erwin S. Oelke, Cypress, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Mar. 13, 1978, Ser. No. 885,892
Int. Cl.[2] E21B *9/08*
U.S. Cl. 175—228 **6 Claims**



1. A sealed lubricated rotary rock bit comprising;

a bit body having at least one leg extending downwardly therefrom, said leg having a journal pin for rotatively supporting a rolling cutter, a seal between said rolling cutter and said journal pin;

a lubricant reservoir disposed in said bit body communicating with the bearing area between said rolling cutter and said journal pin, said reservoir further having a pressure compensator disposed therein, said pressure compensator comprising a resilient membrane separating the reservoir into a lubricant region and a drilling fluid region; and

means for relieving excess lubricant pressure around said membrane to the exterior of said bit body, said pressure relief means comprising an annular seat formed in the wall of said reservoir, a valve face formed on the outer circumference of said membrane, and means for biasing said valve face against said valve seat to prevent flow of lubricant from within said reservoir to the exterior thereof until the excess lubricant pressure exceeds a pre-selected value.

4,161,224

FLUID DUMP MECHANISM

Kai R. Hostrup, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 10, 1978, Ser. No. 876,592
Int. Cl.[2] E21B *1/10*
U.S. Cl. 175—297 **5 Claims**

5. In an apparatus for use in an oil well having:

an outer tubular member;

an inner tubular member longitudinally slidable within said outer tubular member and arranged to have an oil filled chamber between said members;

a metering piston on one of said tubular member in said oil chamber and having a metering means therethrough for controlling longitudinal sliding movement between said tubular members;

dump valve means in one of said members having an open position for bypassing said metering means, and a closed position arranged such that when said dump valve means is in the closed position, slidable movement is controlled by oil flow through said metering means; and

dump valve operating means arranged for moving said dump valve means from its closed position to its open position after a predetermined amount of movement between said members, the improvement comprising;

attachment means releasably attaching said dump valve operating means to the member other than the one having said dump valve means, and subsequent to the opening of said dump valve means, for releasing and sliding longitudinally with the movement of said tubular members while said dump valve means is in the open position.

4,161,225

SKEWED INSERTS FOR AN EARTH BORING CUTTER

Howard E. Mitchell, Duncanville, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 858,236, Dec. 7, 1977, abandoned. This application Aug. 2, 1978, Ser. No. 930,254
Int. Cl.[2] E21B *9/08*
U.S. Cl. 175—374 **2 Claims**

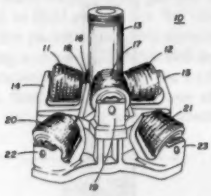
1. An earth boring bit with a cutter having a rotational axis and individual cutting inserts and being adapted to be moved along earth formations causing the inserts to engage the formations and the cutter to rotate in a rotational direction, thereby imposing a radial force from said formations onto said inserts acting perpendicular to said rotational axis of said cutter and a shear force from said formations onto said inserts acting at an angle to said radial force, said radial force and shear force

producing a maximum force that imposes a maximum load on said inserts, comprising:

an earth boring bit body;

a cutter body rotatably mounted on said earth boring bit body, said cutter body containing said rotational axis; and

at least one annular row of inserts projecting from said cutter body for engaging the earth formations, each of said inserts having a central axis that is angularly offset from the rotational axis of the cutter, said inserts being angularly offset in a direction opposite to said rotational direction of the cutter so that said central axis of each of said inserts is substantially aligned with said maximum force when the insert has penetrated the earth formations and is at its maximum load just prior to spalling or chipping of the formations.



4,161,226

VEHICLE DRIVE SYSTEMS

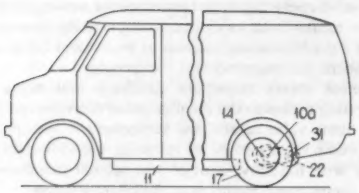
Peter S. Warner, Henlow, and John R. Bicht, Hemel Hempstead, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Apr. 29, 1977, Ser. No. 792,167

Claims priority, application United Kingdom, May 8, 1976, 19033/76

Int. Cl.[2] B60K *1/00*

U.S. Cl. 180—65 E **3 Claims**



1. An electric drive apparatus for an electrically driven vehicle having a body, first and second ground engaging elements at opposite respective sides of the vehicle body, and spring means connecting the ground engaging elements to the vehicle body, the drive apparatus comprising an electric motor mounted on a chassis of the vehicle, the motor having an output to a transmission including a first stage incorporating a differential mechanism, the differential mechanism having two output shaft connected to respective second stages of the transmission, to which the ground engaging elements of the vehicle are connected respectively, the second stages being mounted as unsprung weight of the vehicle and being housed in casings mounted on the vehicle in the manner of radius arms, and the transmission mechanism incorporating joints whereby relative movements between the first and second stages thereof can take place.

4,161,227

TRANSMISSION GEAR FOR A VEHICLE OF THE TYPE HAVING A SWIVELLING UPPER STRUCTURE WITH RESPECT TO AN UNDERCARRIAGE

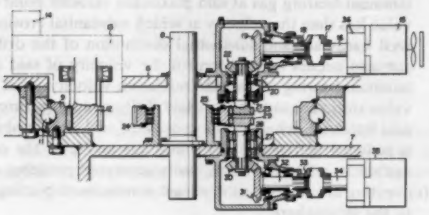
Takayasu Inui, Osaka, and Satoru Nishimura, Hirakata, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation of Ser. No. 645,349, Dec. 30, 1975, abandoned. This application Sep. 26, 1977, Ser. No. 836,707

Claims priority, application Japan, Jun. 30, 1975, 50/91397; Jun. 30, 1975, 50/91398

Int. Cl.[2] B60K *17/02*; B62D *11/02*

U.S. Cl. 180—70 R **2 Claims**



1. In a construction vehicle of the type having an undercarriage with an endless track and a swivelling upper structure pivotally mounted through thrust bearing means on said undercarriage, the combination of:

an engine for use in moving the vehicle mounted on said upper structure and connected through transmission gear means to said endless track, said transmission gear means comprising an input gear rotatably mounted through a bearing on said upper structure, eccentrically from the swivelling axis of the upper structure, an output gear rotatably mounted through a bearing on said undercarriage eccentrically from said swivelling axis and an idler gear mounted in a manner such as to be free to rotate with respect to said undercarriage by the interposition of a bearing on said undercarriage coaxially with said swivelling axis and arranged between said undercarriage and said upper structure wherein said input and output gears are rotatably engaged with each other by the interposition of said idler gear;

an annular internal gear fixedly secured to said undercarriage in a manner such as to be concentric with said swivelling axis and on the outer peripheral surface of which is mounted said thrust bearing means;

a swing means mounted on said upper structure and comprising a swing pinion rotatably engaged with said annular internal gear; and

a motor for use in swivelling said upper structure with respect to said undercarriage mounted on said upper structure and connected to said swing pinion of the swing means whereby the travelling operation of the vehicle and the swivelling operation of the upper structure are independent of, and separate from, each other, while being simultaneously and synchronously performed.

4,161,228

VEHICLE CRASH DETECTOR

Lars G. Svensson, Upsala; Gustav Karlstedt, Sollentuna; Claes Tisell, Strangnas, and Yngve Thorstensson, Sollentuna, all of Sweden, assignors to Forenade Fabriksverken, Sweden

Filed Dec. 28, 1977, Ser. No. 865,216

Claims priority, application Sweden, Jan. 13, 1977, 7700327

Int. Cl.[2] G05G *15/00, 15/02, 15/04*

U.S. Cl. 180—282 **13 Claims**

1. Crash detector for actuating an actuator of an operating system of a movable vehicle when a deceleration force acting on the vehicle exceeds a predetermined magnitude, the vehicle being movable in a predetermined direction of movement and

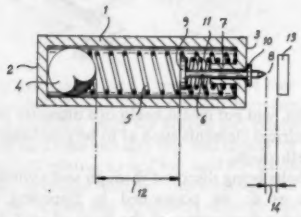
having leading and trailing ends, said crash detector comprising:

a longitudinally extending housing adapted to be mounted on the vehicle and defining a bore having leading and trailing ends facing in the same direction as the leading and trailing ends of the vehicle;

a mass body positioned in the rear end of the bore of said housing for axial movement towards the leading end in response to deceleration forces acting on the vehicle;

a first spring having a predetermined spring constant and exerting a force on said mass body urging the mass body towards said trailing end;

a firing pin axially movable in said bore and positioned in said bore between said mass body and said leading end of said bore and having a portion thereof adapted to actuate



said actuator, said portion being spaced a predetermined distance from the actuator; and

a second spring having a predetermined spring constant greater than the predetermined spring constant of the first spring and exerting a force on the firing pin urging the firing pin towards said trailing end, said mass body and said firing pin and said first and second springs being interrelated in such manner that when a deceleration force acting on the vehicle exceeds the predetermined magnitude, said mass body moves towards the leading end of the bore against the force of said first spring and contacts said firing pin and thereafter moves against the force of said first and second springs, said firing pin being moved said predetermined axial distance by said mass body and the deceleration force.

4,161,229

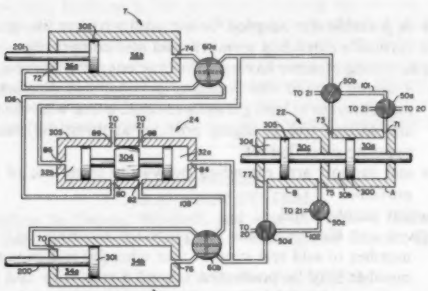
HYDRAULIC SYNCHRONIZING SYSTEM FOR COORDINATING MOVEMENT OF THE VIBRATOR GUIDE RODS

Joseph F. Mifsud, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed May 31, 1977, Ser. No. 802,150

Int. Cl.[2] G01V *1/14*; F01B *25/14*

U.S. Cl. 181—114 **3 Claims**



1. In a vibratory seismic energy source adapted to be transported on a vehicle, including a baseplate which couples seismic energy to the ground, a supporting means positioned above said baseplate for supporting the weight of the vehicle applied to said baseplate, vertically disposed column means on opposite sides of said vibratory source connected to said supporting means and secured in sliding relation to said vehicle, and a pair of lift cylinder assemblies connected to said supporting means on opposite sides of said vibratory source in parallel relation with said column means for raising and lowering said column means relative to said vehicle and for raising and lowering said vehicle as to said column means, said lift cylinder assemblies containing pistons which define said cylinders into working and non-working chambers, the improvement comprising:

hydraulic synchronizing means interconnecting said lift cylinder assemblies for coordinating vertical movement of said column means, including dual piston and cylinder means for simultaneously supplying the working chambers of said lift cylinder assemblies with substantially equal volumes of hydraulic fluid, and a valve means in fluid communication with said working chambers and responsive to pressure differentials existing between the working chambers of said lift cylinder assemblies which adjusts the flow of hydraulic fluid out of the non-working chambers of said lift cylinder assemblies so as to maintain substantially equal pressure in the working chambers of said lift cylinder assemblies.

4,161,230

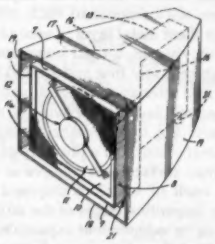
LOUDSPEAKER EQUIPMENT

Warren Ripple, 3345 Marko St., Sarasota, Fla. 33580

Continuation of Ser. No. 687,353, May 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 615,364, Sep. 22, 1975, abandoned. This application Mar. 16, 1978, Ser. No. 886,991

Int. Cl.[2] H05K *5/00*

U.S. Cl. 181—148 **5 Claims**



1. Loudspeaker equipment comprising a speaker, a speaker enclosure having enclosure walls defining a speaker chamber having front and rear intercommunicating compartments, the front compartment being generally rectangular and having a rectangular front wall with an opening therein with the speaker mounted thereon and exposed through the opening, the side walls of the front compartment defining a generally rectangular compartment space, the rear compartment having one dimension equal to one dimension of said front wall and having a dimension perpendicular to the first dimension substantially smaller than the first dimension, two of said side walls having rearward extensions of smaller width than said side walls and serving as side walls of the rear compartment, and the rear compartment having additional walls of the same dimension as said side walls cooperating with said extensions in defining a generally rectangular rear compartment space, one transverse dimension of which is substantially smaller than the corresponding dimension of the front compartment and the other transverse dimension of which is substantially equal to the corresponding dimension of the front compartment, the enclosure walls being at least in large part formed of thin sheet

material capable of excitation and consequent sound vibration under the influence of the speaker at least at frequencies in the lower portion of the audio range, and a reflector in which the speaker and its enclosure are positioned, the reflector having an opening at the front through which the speaker is exposed, said opening being larger than the front compartment of the speaker enclosure to provide clearance at all sides of the speaker enclosure, the reflector having rearwardly converging side walls enclosing the speaker enclosure with clearance at the four lateral sides of both the front and rear compartments of the speaker enclosure.

4,161,231

METAL CAVITATED SANDWICH STRUCTURES

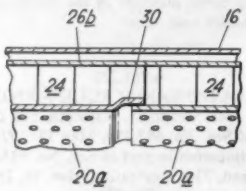
Wilfred H. Wilkinson, Turnditch, England, assignor to Rolls-Royce Limited, London, England

Continuation of Ser. No. 518,964, Oct. 29, 1974, abandoned. This application Nov. 29, 1977, Ser. No. 855,720

Claims priority, application United Kingdom, Oct. 31, 1973, 50690/73

Int. Cl.[2] F01N *1/24*

U.S. Cl. 181—292 **9 Claims**



1. An improved sound absorbing sandwich structure for use in environments where a temperature differential across the structure thickness causes differential expansion and movement of the layers with respect to each other, the structure comprising: a first sheet metal layer, a second sheet metal layer having perforations therein, a rigid honeycomb cellular interlayer disposed between said first and second layers, and means rigidly attaching said interlayer by welding to each of said first layer and said second layer to provide a substantially rigid sandwich structure, the improvement being that one of the layers of sheet metal consists of a plurality of sheet pieces each of which has a small surface area relative to the other layer of sheet metal and each of which is disposed with each of its edges adjacent to respective edges of the adjacent sheet pieces such that there can be independent expansion or contraction of each sheet piece and the edges of each sheet piece can move without interference with respect to the adjacent edges of adjacent sheet pieces when the layers of the structure are subjected to a temperature differential and expand or contract differentially whereby overall shear stress across the sandwich structure is minimized and thereby prevents the second perforated sheet metal layer from cracking.

4,161,232

SAFETY DECK MOUNTING STRUCTURE

Leopold Bustin, Emmans Rd., Flanders, N.J. 07836

Filed Feb. 15, 1978, Ser. No. 877,970

Int. Cl.[2] B60R *3/00*

U.S. Cl. 182—92 **7 Claims**

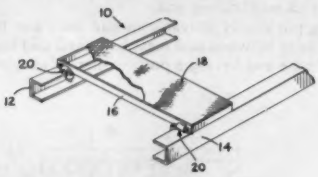
1. Safety deck for vehicles comprising:

a deck structure including a frame element and a grating section;

means for securing said deck structure to the frame of a vehicle, said frame including at least a pair of support structural elements, said means for securing said deck structure comprising at least two cylindrical elements secured outside said frame element whereby said frame element is adapted to be received on said support element, each of said cylindrical elements for receiving a J-bolt therethrough, at least one J-bolt for engaging one of said support structural elements of said frame, another of said J-bolts for engaging another of said support structural elements of said frame;

each of said J-bolts including a base, a short arm and a long arm, said long arm being provided with threads and sized to extend through said cylindrical element;

nut means for threadedly engaging said long arm of said



J-bolts, said nut means being of a diameter larger than said cylindrical elements such as to be precluded from passing therethrough;

said J-bolts being disposed through said cylindrical elements such as to be positioned in opposing configuration whereby positioning of the basis of said J-bolts on said support structural elements and tightening said nut means creates opposing forces in said frame element; and

means disposed on each said J-bolt for resiliently engaging said support structural elements.

4,161,233

PORTABLE TREE SEAT

James A. Wirtz, 1531 Shettler Rd., Muskegon, Mich. 49444

Filed Dec. 9, 1977, Ser. No. 858,963

Int. Cl.[2] A47C *9/10*

U.S. Cl. 182—187 **10 Claims**

1. A portable seat adapted for use with a tree or like generally vertically extending member, said seat comprising:

a mounting member having a first tree engaging portion and a spaced second tree engaging portion, said member dimensioned to at least partially encircle a tree with the first and second tree engaging portions abutting the tree on opposite sides thereof;

a seat support arm extending outwardly from one of said portions;

a seat member; and

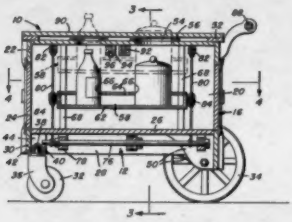
pivot and biasing means for pivotally securing said seat member to said seat support arm whereby said mounting member may be positioned around a tree with said first and second portions engaging opposite sides of the tree and the seat member may pivot relative to said seat support and assume a horizontal position relative to the ground.

4,161,234

SERVING CART

Clyde Munn, 203 Huckleberry Dr., Cheraw, S.C. 29520

Filed Mar. 13, 1978, Ser. No. 885,981
Int. Cl.[2] E04H *3/04*
U.S. Cl. 186—1 R **2 Claims**



1. A serving cart comprising a serving top, a base including wheel means, vertical supports extending between said base and said top, a carrying shelf for bottles and containers positioned between said base and said top, and means for vertically adjusting said shelf relative to said top, said top having a plurality of separate openings defined therethrough for selective projection of the bottles and containers through said openings for direct access thereto when the shelf is vertically adjusted upward toward said top, said shelf including interconnected parallel upper and lower panels, said lower panel comprising a support surface for the bottles and containers, said upper panel having a series of openings therein receiving, positioning, and stabilizing the bottles and containers supported on the lower panel and projecting upwardly through the upper panel openings, said means for vertically adjusting said shelf comprising self-contained power means, including a battery powered motor, mounted on said base, and a control system extending from said power means to said shelf for a selective vertical movement of the shelf in response to activation of the power means, said control system includes an elongated shaft rotatably mounted on said base and driven by said motor, said shaft extending centrally and longitudinally of said base, said shaft having opposed end portions, a pair of flexible members affixed to each end portion of the shaft, each pair of flexible members, outward of the corresponding end of the carrying shelf, extending vertically to and about a series of pulley members affixed respectively to the undersurface of the serving top and the corresponding end of the carrying shelf, whereby rotation of the elongated shaft in a first direction will effect a winding of the flexible members thereon and a corresponding elevation of the carrying shelf, a rotation of the shaft in the opposite direction will effect an unwinding of the flexible members therefrom and a gravitational lowering of the carrying shelf, said serving cart further including an extension leaf hingedly mounted along each edge of the serving top and selectively moveable between a first position overlying the serving top, and a second position pivoted upward and outward so as to generally parallel the serving top, and means for releasably supporting each leaf in its outwardly swung position comprising a support bar, and a track mounted beneath the serving top and receiving said bar for a selective extension thereof outward so as to at least partially underlie the outwardly positioned leaf.

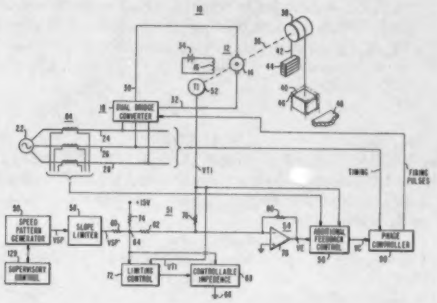
4,161,235

ELEVATOR SYSTEM

William R. Caputo, Wyckoff, and Alan L. Husson, Hackettstown, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 19, 1978, Ser. No. 907,523
Int. Cl.[2] B66B *1/30*
U.S. Cl. 187—29 R **17 Claims**

1. An elevator system, comprising:
an elevator car,
motive means for said elevator car,
speed pattern means providing a speed pattern signal indicative of the desired speed of said elevator car,
means providing a velocity signal responsive to the actual speed of said elevator car,
controllable impedance means,
control means providing a first control signal responsive to at least one predetermined parameter of said speed pattern signal, said control means including reference means providing a first reference signal relative to said at least one



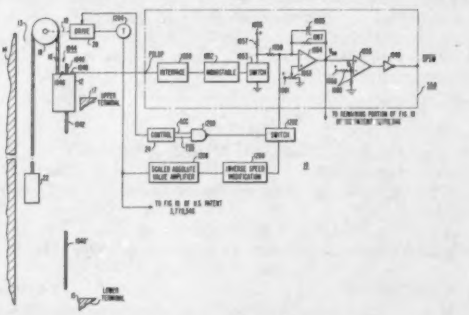
predetermined parameter, said control means modifying the impedance of said controllable impedance means in response to a predetermined relationship between said first control signal and said first reference signal,
and error signal means providing an error signal for controlling said motive means in response to said velocity signal and said speed pattern signal,
said controllable impedance means being connected to modify the affect of said speed pattern signal on said error signal means, at least when its impedance is modified by said control means.

4,161,236

ELEVATOR SYSTEM

Alan L. Husson, Hackettstown, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 1, 1978, Ser. No. 911,575
Int. Cl.[2] B66B *5/04*
U.S. Cl. 187—29 R **5 Claims**



1. An elevator system, comprising:
a building having a hoistway and terminal floors,
an elevator car mounted for guided movement in said hoistway,
velocity means providing a velocity signal responsive to the speed of said elevator car,
detector means providing a speed versus position signal as said elevator car approaches a terminal floor,
overspeed means responsive to said speed versus position

signal for providing an overspeed signal when a predetermined overspeed condition is detected,

control means providing a control signal having a first condition when said elevator car is set to decelerate and stop at a terminal floor, and a second condition when it is not so set,

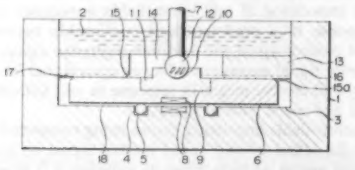
and modification means operative when said control means is in its second condition and said detector means is providing the speed versus position signal, to change a parameter upon which the issuance of the overspeed signal by said overspeed means is based, with said change causing the issuance of the overspeed signal to be advanced in time, compared with the time at which it would otherwise be provided, with the magnitude of the advancement being inversely proportional to the magnitude of said velocity signal.

4,161,237

VIBRATION ABSORBER FOR ROTATING BODY

Norio Uchida, and Nakaba Komiyama, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 15, 1978, Ser. No. 886,888
Claims priority, application Japan, Mar. 22, 1977, 52-31401
Int. Cl.[2] F16F *15/16*
U.S. Cl. 188—1 B **8 Claims**



1. A vibration absorber for a rotating body comprising a tank including at least side and bottom portions and containing a viscous liquid substantially filling said tank, a spherical surface formed at one end of a vertically extending pivot, a first member located adjacent the bottom of said tank and having a partially spherical surface to fit on said spherical surface of the pivot and capable of moving in the horizontal direction, a hollow second member placed on top of said first member and capable of moving in the vertical direction independently of the horizontal movement of said first member, and a centripetal means for locating the center of said first member on the central axis of said pivot upon moving said first member in the horizontal direction, all of said members and means being disposed within said tank.

4,161,238

SELF ENERGIZING BRAKE ASSEMBLY

Jean J. Lasoen, Villepreux, France, and Paul R. Chervenak, Warren, Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.

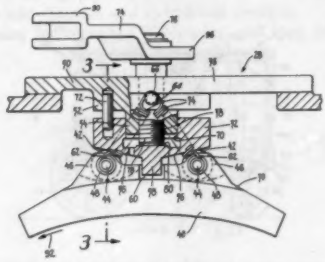
Filed Jun. 9, 1977, Ser. No. 805,052
Claims priority, application Canada, Aug. 6, 1976, 258614
Int. Cl.[2] F16D *49/20*
U.S. Cl. 188—74 **2 Claims**

1. A self-energizing brake assembly adapted to contact the surface of a rotatable member to hold it from rotation and in combination with a radially spaced away support member, said brake assembly comprising:

a laterally shiftable brake shoe disposed between the support member and the rotatable member and having opposed sides, one side being adapted to frictionally contact the surface of the rotatable member, and the other side being provided with a pair of rollers laterally spaced apart in the direction of rotation of the surface of the rotating member;

wedge block means mounted on the support for movement towards and away from said rotatable member, said wedge block means being provided with a pair of laterally spaced apart opposed inclined converging ramp surfaces;

spring means operable to maintain each of said opposed ramp surfaces in rolling contact with an associated one of said pair of rollers; and



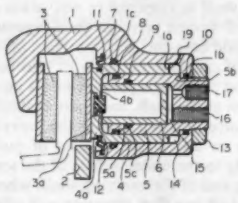
operator controlled extensible force applying means mounted on the support member and capable of positively advancing the wedge block means and the brake shoe towards the surface of the rotatable member to place said one side of the brake shoe into engagement with the surface of the rotatable member.

4,161,239

DISC BRAKE

Yasuo Karasudani, Yokohama, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Dec. 16, 1977, Ser. No. 861,448
Claims priority, application Japan, Dec. 29, 1976, 51/160385
Int. Cl.[2] F16D *65/20*
U.S. Cl. 188—106 P **8 Claims**



1. A brake cylinder comprising:

a cylinder body;

a first piston slidably received in said cylinder body, said first piston having an outer periphery in liquid-tight relationship with said cylinder body;

an inner cylinder having an outer end fixedly secured to said cylinder body, an open inner end, and an outer periphery in liquid-tight sliding relationship with an inner periphery of said first piston;

said outer periphery of said inner cylinder, said first piston, and said cylinder body together defining a first hydraulic chamber;

a second piston slidably received in said inner cylinder, said second piston having an outer periphery in liquid-tight relationship with an inner periphery of said inner cylinder;

said second piston having an outer end cooperating with said outer end of said inner cylinder to define a second hydraulic chamber;

said cylinder body having therein a first annular recess receiving a first annular seal member slidably contacting said outer periphery of said first piston and forming a liquid-tight slidably seal between said cylinder body and said outer periphery of said first piston;

said outer periphery of said inner cylinder having therein a

second annular recess receiving a second annular seal member slidably contacting said inner periphery of said first piston and forming a liquid-tight slidable seal between said inner periphery of said first piston and said outer periphery of said inner cylinder;

said inner periphery of said inner cylinder having therein a third annular recess receiving a third annular seal member slidably contacting said outer periphery of said second piston and forming a liquid-tight slidable seal between said inner periphery of said inner cylinder and said outer periphery of said second piston;

said first and second pistons being axially slidably movable in a first direction from respective initial positions thereof to respective braking positions thereof by liquid pressure supplied into said first and second hydraulic chambers, respectively; and

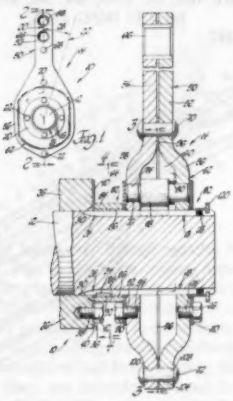
said seal members and the respective said recesses thereof having a configuration such that said seal members comprise means for storing therein restoring forces for, upon the release of said liquid pressure, returning said first and second pistons from said respective braking positions thereof to said respective initial positions thereof.

4,161,240

RATCHET ACTION SLACK ADJUSTER

William L. Pringle, Grosse Pointe Shores, Mich., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Jan. 18, 1978, Ser. No. 870,331
Int. Cl.² F16D 65/54
U.S. Cl. 188—196 BA **18 Claims**



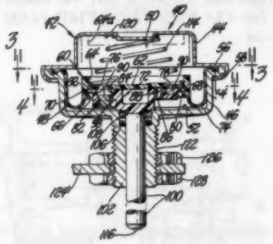
1. A ratchet action slack adjuster assembly comprising; a rotatable actuating shaft displaceable from a rest position for actuating a braking means and having ratchet teeth extending axially along a portion of said shaft, actuator means having an initial position and brake-applied positions mounted on said actuating shaft and coacting with said ratchet teeth for providing input to said rotatable actuating shaft by arcuate movement of said actuator means, adjustment means extending about said shaft and being axially spaced along said shaft from said actuator means for mounting independently of said actuator means on a support means for rotary motion relative to said actuator means and relative to said actuating shaft and coacting with said ratchet teeth at a position spaced axially along said shaft for preventing return rotation of said actuating shaft after said actuating shaft has rotated a predetermined amount corresponding to a desired amount of play in a braking means.

4,161,241

DASHPOT APPARATUS INCLUDING A FLEXIBLE DIAPHRAGM PISTON

William C. Larson, Rochester, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,880
Int. Cl.² F16F 9/04
U.S. Cl. 188—298 **2 Claims**



1. A dashpot assembly, comprising housing means including first and second housing sections, moveable wall means situated within and cooperating with said housing means to define at least first and second distinct and variable chamber means at either side of said moveable wall means and internally of said housing means, said moveable wall means comprising a relatively flexible diaphragm peripherally retained generally between and by said first and second housing sections and having a relatively rigid diaphragm-engaging body, said diaphragm being generally juxtaposed to said diaphragm-engaging body so as to be situated on generally the first chamber side of the diaphragm-engaging body, said diaphragm-engaging body being situated as to be on generally the said second chamber side of said diaphragm, said diaphragm comprising a generally relatively thick diaphragm body portion positioned in juxtaposed relationship to said diaphragm-engaging body, said diaphragm body portion comprising recess-like means formed generally on said second chamber side thereof, said diaphragm-engaging body comprising a flange means, said flange means being received in said recess-like means for operatively connecting said diaphragm to said diaphragm-engaging body, motion transmitting means operatively carried by said moveable wall means and being effective when actuated to move said moveable wall means in a direction toward said first chamber, said motion transmitting means being operatively connected to said diaphragm-engaging body, conduit means carried by said moveable wall means for completing communication between said first and second chambers, said conduit means including sintered gas permeable metering means having the capability of permitting a preselected volume rate of flow of air therethrough at a corresponding air pressure differential thereacross, said conduit means comprising first passage means formed in said diaphragm-engaging body and containing said gas permeable metering means and second passage means formed through said diaphragm body portion and communicating with said first passage means, said second passage means comprising a first conduit section and a second conduit section each formed through said diaphragm and spaced from each other, said diaphragm-engaging body having annular passage means formed in the face thereof juxtaposed to said diaphragm in a manner to inter-connect said first passage means with said second passage means, and third passage means formed through said diaphragm-engaging body, said third passage means being effectively closed to flow therethrough by said diaphragm when said diaphragm and said diaphragm-engaging body are being moved in said direction toward said first chamber, said diaphragm being operative to open said third passage means to flow therethrough from said second chamber to said first chamber when said diaphragm and said diaphragm-engaging body are being moved in a sec-

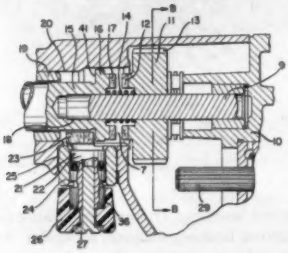
ond direction opposite to said first direction and toward said second chamber.

4,161,242

POWER-DRIVEN DRILL AND SCREWDRIVER

Robert G. Moores, Jr., Reisterstown, and Charles E. Hopkins, Sr., Baltimore, both of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Jun. 15, 1977, Ser. No. 806,907
Int. Cl.[2] B23B *21/00*; F16D *11/00*
U.S. Cl. 192—34 **25 Claims**



1. A power-driven drill and screwdriver comprising:
a housing having a longitudinal axis;
a drive motor mounted in said housing;
a case attached to said housing;
a first clutch member rotatably mounted in said case and operatively connected to said drive motor;
a second clutch member rotatably mounted in said case and slideably movable relative to said first clutch member between a first location whereat said second clutch member firmly engages said first clutch member and a second location whereat said second clutch member is disengaged from said first clutch member;
means biasing said second clutch member into said second location;
cam means being mounted on said case so as to be rotatably adjustable about an axis transverse to said longitudinal axis from one position on said case corresponding to the screwdriving mode of the tool to another position on said case corresponding to the drill mode of the tool;
said cam means being arranged in said case with respect to said second clutch to counteract the urging force of said biasing means and to displace said second clutch member into said first location when said cam means is adjusted from said one position to said other position;
manually-adjustable means for adjusting said cam means between said two positions;
first limit means and second limit means coacting with said manually-adjustable means for defining said positions, respectively; and,
connection means for connecting said manually-actuable means to said cam means so as to cause said first limit means to correspond to one of said positions and said second limit means to correspond to the other one of said positions.

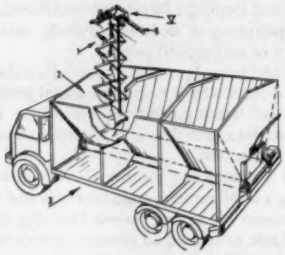
4,161,243

FALL BRAKE

Marius Grisnich, No. 9, Punterstraat, Emmeloord, Netherlands

Filed Aug. 4, 1977, Ser. No. 821,915
Claims priority, application Netherlands, Aug. 25, 1976, 7609467
Int. Cl.[2] B65G *11/08*
U.S. Cl. 193—27 **10 Claims**

1. A fall brake for material comprising a plurality of frames, suspension means for suspending said frames one beneath the other, each frame having a material guide directed downwards in a sense opposite that of the overlying material guide, wherein the frames are povitally interconnected in staggered positions and said suspension means includes at least one flexible member extending from a lifting mechanism and connected at least to the lowermost frame, characterized in that the lowermost operative frame can be upwardly pivoted from its operative position into an inoperative position in which the



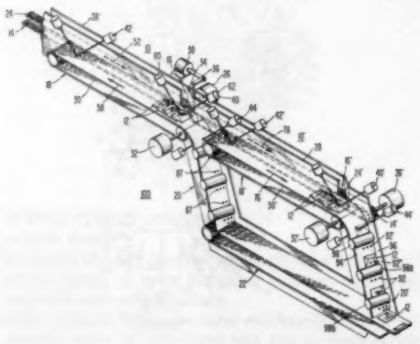
frame is mainly parallel to the overlying frame and in that each frame has suspended to it a material guide extending downwardly at an angle to said frame,
said suspension means including a belt having holes for suspending said frames at intervals along its length and wherein in order to regulate the angle of inclination of the material guide the belt has a plurality of suspension holes.

4,161,244

MAIL BUFFER FEEDER SYSTEM

James R. Hunter, Chadds Ford; Sebastian J. Lazzarotti, and Robert S. Bradshaw, both of Broomall, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 31, 1978, Ser. No. 892,190
Int. Cl.[2] B65G *47/30*
U.S. Cl. 198—347 **15 Claims**



1. A buffer feeder system for processing mail pieces comprising:
at least a first and a second subsystem having transport means for conveying said mail pieces thereto, said first and second subsystem having respective first and second buffer feeder conveyor means positioned in operative relationship with said transport means, first and second gating means associated respectively with said first and second subsystem and being operatively positioned with respect to said transport means for selectively directing said mail pieces onto said first and second buffer feeder conveyor means, at least first and second mail sensing means positioned at substantially the opposite extremities of the buffer feeder conveyor means of each subsystem,
master control means coupled to both subsystems for initiating concurrently a buffer mode in one subsystem and a

feeder mode in the other subsystem, said master control means causing at a predetermined time said first subsystem to assume a buffer mode and said second subsystem to assume a feeder mode wherein said first gating means assumes a physical orientation which causes all of the mail pieces being conveyed by said transport means to be directed onto said first buffer feeder conveyor means, said master control means conditioning said first buffer feeder conveyor means for motion in a direction to receive and buffer said mail pieces,

said first mail sensing means of said first subsystem being positioned in proximity to said first gating means and being coupled to said first buffer feeder conveyor means, said first mail sensing means being responsive to the presence of each mail piece deposited upon the latter conveyor means for incrementing the conveyor motion in a fixed step to produce a shingled batch of mail pieces, said second mail sensing means of said first subsystem being coupled to said master control means and providing an electrical signal thereto indicative of a full condition in said first buffer feeder conveyor means,

said master control means conditioning said second buffer feeder conveyor means at said predetermined time for motion in a direction to feed out the shingled batch of mail pieces previously stored on the last mentioned conveyor means.

4,161,245

PROCESS AND APPARATUS FOR FEEDING ELONGATED ARTICLES IN ORIENTED POSITIONS

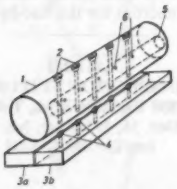
Stig G. Baggström, Tullinge, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 29, 1977, Ser. No. 865,533

Claims priority, application Sweden, Jan. 26, 1977, 7700788

Int. Cl.[2] B65G *47/24*

U.S. Cl. 198—399 **13 Claims**



1. A method of feeding elongated articles having enlarged heads at one end, said method comprising depositing a plurality of elongated articles into a correspond plurality of bores in a turnable member in random orientation in which the elongated articles may be introduced in some bores head-first and in other bores tail-first, passing the articles through the bores in which they are introduced tail-first, holding the articles in the bores in which they are introduced head-first, turning the turnable member 180° while continuing to hold the articles introduced head-first into the bores so that said articles are now inverted and releasing the now inverted articles for passage through the bores.

4,161,246

PACKAGED SLIDE FASTENER

Taruo Tanaka, 3551 Niederwalgen, Marburg am der Neuen Schule 14, Fed. Rep. of Germany, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

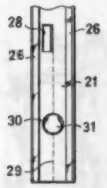
Continuation of Ser. No. 748,952, Dec. 9, 1976, abandoned. This application Jun. 7, 1978, Ser. No. 913,442

Claims priority, application Japan, Dec. 29, 1975, 50/177587

Int. Cl.[2] B65D *85/18, 75/36*

U.S. Cl. 206—45.31 **4 Claims**

1. A packaged slide fastener comprising: an elongated base plate; a slide fastener placed on one surface of said base plate, said base plate being substantially coextensive in width to said slide fastener and having a length greater than that of said slide fastener; and an elongated plastic film having substantially the same length as said base plate and having a width greater than that of said base plate, said plastic film covering said base plate and said slide fastener thereon and having side margins folded back over the side edges of said base plate, the folded margins



of said plastic film being adhered to the other surface of the base plate, said base plate having a portion of said one surface covered directly with an adhered to said plastic film, and there being a cutout recess in said portion, said base plate having an inspection opening, a perforation extending between said inspection opening and one end of said base plate, and an aperture receiving therein the bottom wing of the slider of said slide fastener.

4,161,247

METHOD OF AND MEANS FOR PRESERVING TENNIS BALLS OR THE LIKE

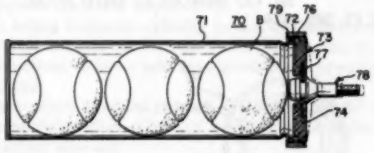
Robert S. Feinberg, 81 Edgemont Pl., Teaneck, N.J. 07666, and David A. Selick, 76 Le Roy St., Tenafly, N.J. 07670

Continuation of Ser. No. 564,347, Apr. 2, 1975, abandoned, which is a division of Ser. No. 347,080, Apr. 4, 1973, Pat. No. 3,889,807. This application Dec. 13, 1977, Ser. No. 859,999

The portion of the term of this patent subsequent to Jun. 17, 1992, has been disclaimed.

Int. Cl.[2] B65D *45/32, 85/00*

U.S. Cl. 206—315 B **2 Claims**



1. A cap for closing the open end of a cylindrical container to form a storage receptacle capable of maintaining pressure therein comprising a closure member formed of an elastomeric material including relatively thick central portion releasably engaging the open end of said container and a relatively thin annular border, a locking collar slidably engaging said annular border and holding it in compressed engagement with the outer face of said container said open end, and an inflation valve mounted on said closure member and providing communication between opposite sides thereof.

4,161,248

CONTAINER FOR WIRE SPOOL

Martin Kalmanovitch, Montreal, Canada, assignor to Universal Wire & Cable Co. Ltd., Montreal, Canada

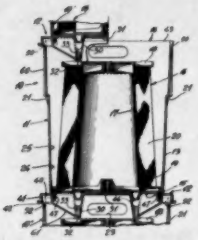
Filed Oct. 11, 1977, Ser. No. 840,787

Int. Cl.[2] B65D *85/04, 85/66, 21/02, 51/02*

U.S. Cl. 206—389 **7 Claims**

1. The combination of a spool for metal wire and the like and a container for said spool; said spool having a core and upper and lower flanges at the opposite ends thereof; said container

comprising a housing and a removable cover; said housing having a side wall, a bottom wall and an open top end; said spool being disposed entirely within said housing with said lower flange being seated on said bottom wall, said upper flange being recessed below the housing top end; said cover closing said housing open top end and including a depending wall having a portion in sealing sliding engagement with the



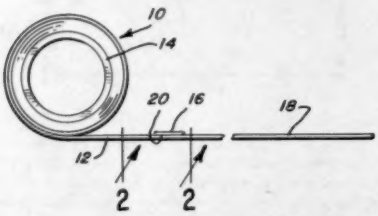
exterior of said housing side wall defining a floating joint between said cover and said housing permitting vertical displacement of said cover relative to said housing while frictionally engaging said housing to accommodate spools of different heights; and said cover having load transfer means depending into said housing and being directly seated on said upper flange with said spool directly transferring loads between said cover and said bottom wall independently of said housing side wall.

4,161,249

WEB PRODUCT WITH MARKER AND METHOD OF MANUFACTURE

Russell N. Dashow, Glencoe, Ill., assignor to RND Company

Filed Apr. 13, 1978, Ser. No. 895,992
Int. Cl.[2] B65D *85/67*; G01D *13/00*
U.S. Cl. 206—459 **10 Claims**



1. A web product which is marked at predetermined locations to aid a user dispensing said product, comprising:

an integral web having a predetermined length and a predetermined width between the longitudinal edges of said web, said web being wound into a roll having said width, said web having an inside surface of a first color; and

marking means secured to said inside surface of said web along at least one predetermined location intermediate the ends of said web, said marking means extending transversely across said web and being disposed between said longitudinal edges of said web, said marking means having a first surface overlying said web and an opposing exposed surface of a second color;

whereby said web can be unwound to expose said marking means which signifies to a user that a predetermined portion of the length of said web has been unwound.

4,161,250

KIT FOR DECORATING BORDER PANEL OF PICTURE MATS

Donald C. Pierce, 59 Reposa Vista, Novato, Calif. 94947

Continuation of Ser. No. 760,263, Jan. 18, 1977, abandoned, which is a division of Ser. No. 588,965, Jun. 20, 1975, Pat. No. 4,025,666. This application Apr. 27, 1978, Ser. No. 900,432
Int. Cl.[2] B05C *17/10*
U.S. Cl. 206—575 **3 Claims**

1. A kit for dry-powder coloring of cardboard picture mats or portions thereof, comprising:

a receptacle containing a plurality of elements which include at least one cardboard picture mat, a dry cleaning erasure pad of an open knit cloth bag containing eraser particles for dry cleansing of a dry mat surface and preparing it for dry application of powder and for evenly removing powder from the surface to lighten it,

at least one container containing a mixture of pigmented fine dry inorganic powder including one of a dominant color and a hue-lightener,

a wide-end applicator for dry application of said powder to the cleaned dry mat, and

a soft pencil type of eraser for removal of unwanted areas of applied powder from said mat,

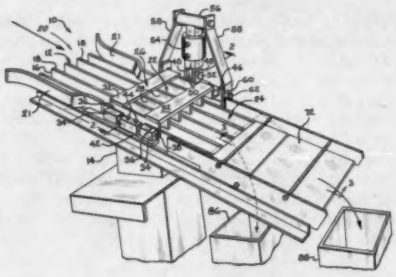
the particle size of the major portion of the powder being in the range of 0.1–5 microns for the powder of dominant hue and 1–10 microns for the hue-lightener.

4,161,251

INSPECTION FIXTURE

William A. Paul, 1808 Parkside Blvd., Toledo, Ohio 43607

Filed Dec. 16, 1976, Ser. No. 751,449
Int. Cl.[2] B07C *5/08*
U.S. Cl. 209—604 **3 Claims**



1. An inspection fixture comprising a lower object support having an entrance portion, an intermediate portion, and a discharge portion, said intermediate portion of said lower object support being of conductive material, an upper conducting member, means for movably supporting said upper conducting member in a first position above said intermediate portion of said lower object support, fluid-operated means for moving said conducting member from the first position to a second position further spaced from said intermediate portion, means for supporting said lower object support at an angle to the horizontal whereby an object placed on said entrance

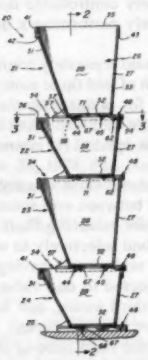
portion will move by gravity past said intermediate and said discharge portions, a source of electrical power connected between the said conducting member and said intermediate portion of said lower object support, valve means in series with said source of power for actuating said fluid-operated means to move said conducting member from the first position to the second position when an object contacts both said conducting member and said intermediate portion of said lower object support to complete a circuit between said valve means and said power source, means forming an opening associated with said discharge portion, a diverter plate, and means operated by said valve means for moving said diverter plate from a first position covering said opening whereby objects passing over said discharge portion can pass over said opening, and a second position spaced from said opening whereby objects passing over said discharge portion will drop through said opening.

4,161,252

SET OF SORTING-STACKING BINS

John N. M. Howells, Kittery, Me., assignor to Recycling & Conservation, Inc., Kittery, Me.

Filed Nov. 16, 1977, Ser. No. 852,073
Int. Cl.[2] A47F *3/14*
U.S. Cl. 211—126 **15 Claims**



1. A vertical stack of removable bins:

each bin comprising a container having an integral bottom wall, a front wall, a rear wall and a pair of opposite side walls, all formed of self supporting, water-resistant, sheet material,

and each bin having a separable enlarged base underlying, and removably affixed to the said bottom wall thereof, said base having downwardly depending flanges along the side and rear edges thereof adapted to closely fit the corresponding upper edges of the rear and side walls of the next lowermost said container to seat thereon

the front wall of each said container being inclined downwardly and inwardly from proximate the upper edge thereof to proximate the lower edge thereof to thereby define a top front opening into the next lowermost said container,

each said base having a front edge, spaced from the front edge of said top front opening, to define the rear edge of said opening,

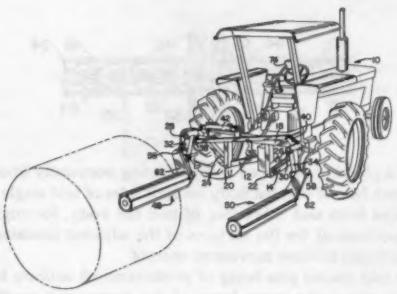
and each said base being joinably separate from its respective container so that a plurality of said containers may be shipped nested and the bases thereof shipped separately.

4,161,253

CARRIER AND DISPENSER FOR CYLINDRICAL BALES

Horace E. Ralston, Millington; Edward L. Robinson, Jr., Memphis, both of Tenn., and William K. Ralston, deceased, late of Cordova, Tenn. (by Louise Ralston, executor), assignors to International Harvester Company, Chicago, Ill.

Filed Aug. 16, 1977, Ser. No. 825,009
Int. Cl.[2] B66F *9/19*
U.S. Cl. 414—25 **2 Claims**



1. An apparatus adapted for mounting on a mobile unit for dispensing hay from a cylindrical bale, said apparatus comprising:

a frame mountable on the unit and including a transverse main beam having a pair of spindles projecting at right angles therefrom at opposite ends of the beam;

a pair of arms journalled respectively on said pair of spindles and extending generally downwardly therefrom;

a pair of elongated rollers journalled on said arms and projecting at right angles therefrom in spaced parallel relation for releasably holding a cylindrical bale with its longitudinal axis parallel to the rollers;

an elongated bar pivotally and directly interconnecting said arms for moving said arms toward and away from each other in response to moving said bar in one direction and the opposite direction respectively;

a double acting hydraulic cylinder connected between said main beam and said bar for selectively moving said bar in said directions to move said arms toward and away from each other;

a hydraulic motor mounted on each of said arms for driving the respective rollers to rotate a bale thereon about its longitudinal axis; and

control means for driving said motors at varying speeds relative to each other whereby a shredding or tearing action may be imparted by the rollers to the bale thereon to enhance dispensing of hay from the bale.

4,161,254

ANCHOR MEMBER FOR UNITIZING A PLURALITY OF CONTAINERS

Charles F. Taylor, 150 E. Industry, La Habra, Calif. 90631

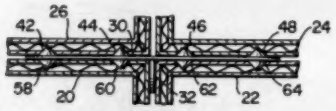
Continuation-in-part of Ser. No. 808,297, Jun. 20, 1977, abandoned, and a continuation-in-part of Ser. No. 679,090, Apr. 21, 1976, Pat. No. 4,069,927. This application Oct. 6, 1977, Ser. No. 839,892
The portion of the term of this patent subsequent to Jan. 24, 1995, has been disclaimed.
Int. Cl.[2] B65G *1/14*
U.S. Cl. 206—504 **1 Claim**

1. An anchor member for unitizing a plurality of corrugated containers having inner and outer layers, said anchor member including:

(a) a flat, rigid body of substantially rectangular shape for placement at the junction between laterally adjacent corrugated cardboard containers having flat surfaces dis-

posed in substantially the same plane, one face of said flat body being engaged with a portion of the flat surface of adjacent containers

(b) a single rectilinear wall extending outwardly from said one face of said flat body for engagement with portions of adjacent containers proximate the flat surfaces engaged by said flat body, said wall being proximate the midpoint of one dimension of the flat body and extending transversely for the majority of another dimension, and



(c) a plurality of spaced pins projecting outwardly from said one face of said flat body on both sides of said single wall, and from said other face of said flat body, for engaging portions of the flat surfaces of the adjacent containers to prevent relative movement thereof

(d) said spaced pins being of predetermined uniform height to pierce the outer layer of the corrugated cardboard containers but not the inner layer thereof, thereby preserving the contents of the containers from contamination.

4,161,255

DEVICE FOR DISCHARGING MATERIALS LYING UPON A STORAGE AREA

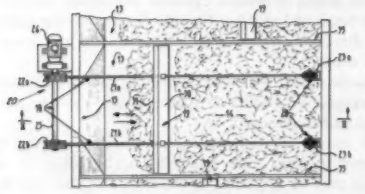
Claude P. Ropert, 1 Cite du Parc, Boite Postale 46, 28240 La Loupe, France

Filed Dec. 1, 1977, Ser. No. 857,351

Claims priority, application France, Dec. 2, 1976, 76 36324

Int. Cl.[2] B65G *25/08*

U.S. Cl. 414—323 **6 Claims**



1. In a device for handling and more particularly for discharging materials or products lying in a pile upon a horizontal or slightly sloped storage area, comprising a movable scraping element, a reversible winch system comprising at least one hauling cable and sheaves and a motor for said winch system, means for reversing the movement of said winch system for driving said scraping element in a back-and-forth movement on said storage area and discharging means contiguous to said storage area; the improvement comprising means for measuring the resisting force exerted on said scraping element while said element is moved into said pile of material, means for setting a predetermined value of resisting force, control means for generating a controlling signal when said resisting force reaches said predetermined value, and means for connecting said reversing means to said control means upon said controlling signal being transmitted for reversing the direction of movement of said winch system and consequently of said scraping element for discharging material from said pile of material.

4,161,256

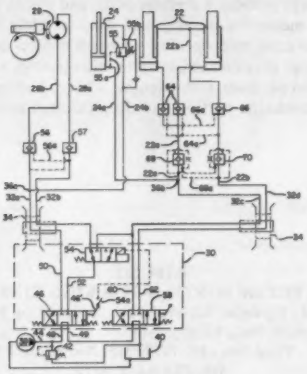
FLUID POWER SYSTEM HAVING MULTIPLE, SEPARATELY CONTROLLABLE DOUBLE-ACTING FLUID MOTORS AND REDUCED NUMBER OF FLUID CONDUITS

Richard D. Seaberg, Vancouver, Wash., assignor to Cascade Corporation, Portland, Oreg.

Filed Oct. 4, 1977, Ser. No. 839,179

Int. Cl.[2] B66F *9/18*

U.S. Cl. 414—620 **17 Claims**



1. A fluid power system having a source of pressurized fluid and multiple, separately controllable double-acting fluid motors each for selectively performing a different function, said system comprising:

(a) at least three of said separately controllable double-acting fluid motors, each of said three motors having a respective fluid line means for connecting the respective motor to said source, each of said respective line means comprising a pair of fluid lines operatively connected separately to the respective motor;

(b) selectively operable fluid control valve means operatively connected between said source and said respective fluid line means for receiving fluid from said source and delivering said fluid selectively to said fluid lines;

(c) each of two of said motors having one of its fluid lines operatively connected to said valve means jointly with a fluid line of the third motor, and having the other of its fluid lines operatively connected to said valve means separately from the fluid lines of the other ones of said motors, the fluid lines of the third motor being operatively connected to said valve means separately from one another.

4,161,257

CLOSURE FOR VACUUM BOTTLES AND THE LIKE

Hermann Hauri, Lenzburg, Switzerland, assignor to Genossenschaft Vebo Solothurnische Eingliederungs-Stätte für Behinderte, Zuchwil, Switzerland

Filed May 24, 1977, Ser. No. 799,946

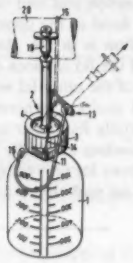
Claims priority, application Switzerland, May 25, 1976, 6758/76

Int. Cl.[2] B65D *51/16*

U.S. Cl. 215—260 **10 Claims**

1. The combination of a container including a neck portion having an open end and an inner surface with a detachable elastic closure comprising a substantially cylindrical portion surrounding said neck portion and having a first and a second end, and an end wall integral with said first end and extending across said open end, said end wall having a substantially centrally located opening and being readily deformable in response to establishment of a pressure differential between the interior and exterior of said contaner whereby the extent of

deformation of said end wall furnishes a visually detectable indication of said pressure differential, a conduit comprising a flexible hose sealingly connected with said end wall and communicating with the interior of said container via said opening, and a suspending device for said closure, said suspending de-



vice comprising a section having two legs connected to said cylindrical portion and a further portion defining a slit, said hose being insertable into said slit and the width of said slit being such that said further portion deforms and seals said hose when the latter is inserted into said slit.

4,161,258

STOPPER ARRANGEMENT FOR BOTTLES

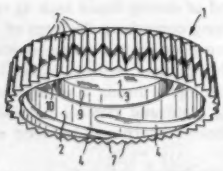
Albert Obrist, Therwilerstr. 12, Reinach BL, Switzerland (4153)

Filed Mar. 28, 1978, Ser. No. 890,939

Claims priority, application Switzerland, Mar. 29, 1977, 3926/77

Int. Cl.[2] B65D *41/04*

U.S. Cl. 215—302 **18 Claims**



1. Stopper arrangement for bottles, comprising a bottle having an externally threaded neck which is closed by a synthetic plastic screw cap, the screw cap having an approximately cylindrical internally threaded wall part which is closed by an upper lid surface, the external threading of the bottle neck and the internal threading of the screw cap having at least two thread turn segments which rise at an angle less than 30°, the screw cap having on its circumference at least a section protruding sufficiently outwardly from the bottle neck for the application of the lifting portion of a crown cork opener, the distance of the protruding section from the upper lid surface of the screw cap being not greater than the clear internal width of a crown cork opener, and the cylindrical wall part being of such elastic formation that the stopper cap can be vertically lifted and opened by a crown cork opener without screwing movement.

4,161,259

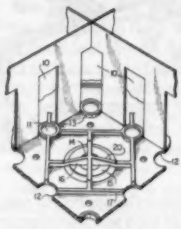
STACKABLE CONTAINER FOR BOTTLES AND THE LIKE

Federico V. Palafox, Naucapan de Juarez, Mexico, assignor to Procesos Plasticos, S.A., Mexico

Filed Oct. 17, 1977, Ser. No. 842,989

Int. Cl.[2] B65D *1/26, 25/06*

U.S. Cl. 220—21 **5 Claims**



1. An improved container for holding and transporting bottles and the like comprising

a unitarily formed parallelepiped container having pairs of rectangular side and end walls, a bottom wall and a plurality of longitudinally and transversely extending inner walls, said inner walls intersecting to divide said container into a plurality of cells adapted to receive bottles;

means at the corner junctions of said side and end walls forming a double wall structure including spaced, parallel wall portions;

said end walls including means extending between the upper portions of said corner junctions defining a handle;

means in said inner and end walls defining spaced apart openings extending upwardly from said bottom wall, at least some of said openings being located at the intersections of said inner walls;

means in said bottom wall defining a first plurality of generally circular holes, at least some of which are located below said openings;

means in said bottom wall defining a second plurality of holes, each of the holes of said second plurality being substantially centrally located in said cells and being of a smaller diameter than the tops of bottles to be received in said cells;

rib means integrally formed on said bottom wall for improving the rigidity thereof, said rib means including a first plurality of ribs extending across the inner surface of said bottom wall between the holes of said first plurality of holes;

a plurality of annular flanges extending upwardly from the inner surface of said bottom wall surrounding each of said first plurality of holes and connected to said first plurality of ribs;

a second plurality of ribs extending radially across and outwardly from the holes of said second plurality of holes,

pairs of said second ribs extending diagonally across said cells perpendicular to each other and intersecting at the centers of said second plurality of holes, said second plurality of ribs being connected to said first plurality of ribs,

said first plurality of ribs forming, in each cell, a square rotated 45° from the peripheral edges of the cell; and

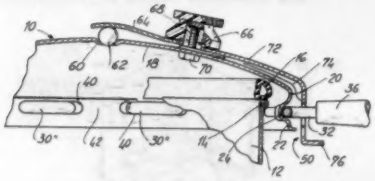
each of said second plurality of ribs being thicker at the center thereof than at either end, the upper surfaces thereof being tapered to engage a generally concave bottle bottom.

4,161,260

COVER FOR PRESSURE POTS

Adriano Lagostina, Gravellona Toce, Italy, assignor to Stratoflat International Company, Schaan, Liechtenstein

Filed Jul. 20, 1978, Ser. No. 926,282
Claims priority, application Italy, Dec. 3, 1977, 30539 A/77
Int. Cl.[2] B65D *45/00*
U.S. Cl. 220—316 **9 Claims**



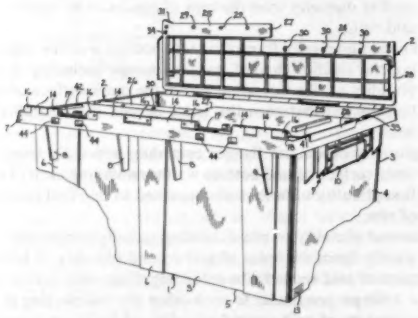
1. A cover effective to be applied to pots, casseroles and like kitchen containers, of such size and structural characteristics as to allow for a use thereof as the "container" part of a "pressure pot" and comprising an outwardly projecting rim or edge at the mouth thereof, characterized in that it is formed by a structural component (generally made of metal and of cup-like shape) comprising a downwardly directed bent rim, of such a size as to be fitted with a reduced clearance about said container projecting rim, and in that it comprises an essentially annular component, located about said rim and effective to contract or shrink, from a condition of free passing about the projection of the container mouth, to a condition in which at least a part of the structure fitted about the rim of container engages abuttingly said projection, said cover further including means effective to provide for tightness, safety and shrinking of said annular component, the applying of said cover to said container and the abuttingly fixing of the cover to the rim of the container allowing for an efficient pressure pot to be obtained.

4,161,261

SECURITY CONTAINER

James J. Frater, Watertown, Wis., assignor to Menasha Corporation, Neenah, Wis.

Filed May 5, 1978, Ser. No. 903,253
Int. Cl.[2] B65D *43/14, 51/04*
U.S. Cl. 220—337 **16 Claims**



1. A container assembly, comprising an open-top container having a generally vertical wall and a bottom connected to the lower end of the wall, a pair of lid sections each having a first edge hinged to the upper edge of the vertical wall and having a second edge disposed opposite said first edge, said lid sections disposed to pivot from a downwardly hanging storage position to a generally horizontal closed position, a first flap member disposed on the second edge of each lid section and projecting laterally of said second edge beyond the center line of the container and extending approximately one-half the longitudinal length of said second edge, a second flap member disposed on the second edge of each lid section and extending approximately one-half the length of said second edge, said second flap member being recessed relative to the outer surface of each lid section and said outer surface being substantially at the same level as the upper edge of the vertical wall when the lid section is in the closed position, the first flap member of one of the lid sections disposed to overlie the second flap member of the other lid section when the lid sections are in the closed position, whereby the closed lid sections provide a substantially flat upper supporting surface, and projection means extending upwardly from the upper surfaces of the closed lid sections for preventing displacement of an upper container stacked on said closed lid sections.

4,161,262

MULTIPLE DOSING DEVICE

Reiner Habrich, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 14, 1977, Ser. No. 833,356
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1976, 2642652
Int. Cl.[2] G01F *11/28, 11/06*
U.S. Cl. 222—1 **12 Claims**

10. A method of dosing liquid such as reaction resin compounds for casting comprising the steps of:

(a) interposing plate shaped dosing elements, each containing a dosing plunger, with a dosing liquid inlet, dosing liquid outlet and a dosing control inlet between a liquid connecting plate and control connecting plate with a sealing element interposed between each two adjacent plates;

(b) forming diaphragm valves from cooperating surfaces of said plates and said sealing elements, a first valve being formed for each dosing element at the dosing liquid inlet and a second valve being formed at the dosing liquid outlet;

(c) feeding the liquid to be dosed under pressure from said liquid connecting plate to the first diaphragm valve associated with each dosing element; and

(d) controlling said diaphragm valves such that:

(1) the first diaphragm valves are opened to permit the dosing liquid, under pressure, to move the dosing plungers in one direction and fill cylinders;

(2) said first diaphragm valves are closed and said second diaphragm valves opened; and

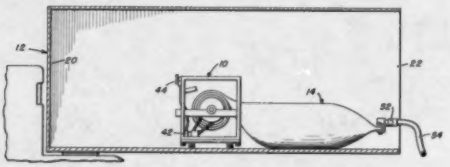
(3) a fluid pressure medium is applied to the dosing control inlet to operate said dosing plungers in the opposite direction to simultaneously dispense dosing liquid from all of said dosing elements.

4,161,263

HANDLING SYSTEM FOR FLEXIBLE SHIPPING CONTAINERS

Robert J. Wagner, Wernersville, Pa., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Dec. 29, 1977, Ser. No. 865,495
Int. Cl.[2] B60P *3/22*; B65D *35/28*
U.S. Cl. 222—100 3 Claims



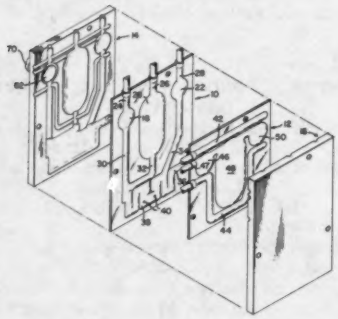
1. For use within a bulk freight shipping container having a support floor, an inner end, and an outer discharge end; a handling system comprising a collapsible fluent material shipping tank selectively positionable on and along the support floor, said system further comprising an independent handling and storage rack positionable on said support floor inward of the tank, said rack including means mounted thereon for supporting said rack on said support floor for free travel of the rack along said floor between the inner end and the outer discharge end both in conjunction with and relative to said tank, said tank having an inner end and an outer discharge end, means for selectively engaging said rack with the inner end of the tank, and power means on said rack for travel therewith both for a selective power drawing of said tank into a collapsed stored position on said rack in conjunction with a traveling of the rack toward said discharge end, and a selective discharge of said tank from said rack.

4,161,264

FLUID METERING AND MIXING DEVICE HAVING INLET AND OUTLET VALVES

Arthur L. Malmgren, 386 NW. 112th. St., Seattle, Wash. 98177, and Bryan E. Johnson, 21708 80th W., Edmonds, Wash. 98020

Filed Jun. 17, 1977, Ser. No. 807,425
Int. Cl.[2] B65D *37/00*
U.S. Cl. 222—135 6 Claims



1. A device for metering a fluid at a predetermined flow rate, comprising:

a first fluid chamber having a predetermined volume;

a first set of flexible, elongated fluid inlet and outlet conduits communicating with said first fluid chamber;

a second fluid chamber having a predetermined volume;

a second set of flexible, elongated fluid inlet and outlet conduits communicating with said second fluid chamber;

a first flexible clamp tube having an externally accessible inlet end and a restricted terminating end, said first clamp tube overlying the inlet conduit of said first set and the outlet conduit of said second set;

a second flexible clamp tube having an extenrally accessible inlet end and a restricted terminating end, said second clamp tube overlying the outlet conduit of said first set and the inlet conduit of said second set;

a first pair of rigid surfaces spaced apart by the overlying portions of said first clamp tube and said inlet and outlet conduits by a fixed distance selected such that pressurization of said first clamp tube collapses the walls of the inlet conduit of said first set and the outlet conduit of said second set thereby preventing fluid flow into said first fluid chamber and from said second fluid chamber;

a second pair of rigid surfaces spaced apart by the overlying portions of said second clamp tube and said inlet and outlet conduits by a fixed distance selected such that pressurization of said second clamp tube collapses the walls of the outlet conduit of said first set and the inlet conduit of said second set thereby preventing fluid flow out of said first fluid chamber and also preventing fluid flow into said second fluid chamber; and

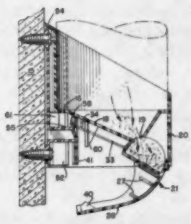
control means alternating between first and second cycles, said control means pressurizing said first clamp tube while depressurizing said second clamp tube during said first cycle thereby allowing fluid to fill said first fluid chamber and allowing fluid to drain from said second fluid chamber, and said control means depressurizing said first clamp tube while pressurizing said second clamp tube during said second cycle thereby allowing fluid to drain from said first fluid chamber and allowing fluid to fill said second fluid chamber such that the flow rate of fluid from said metering device is a substantially constant predetermined value.

4,161,265

DEVICE FOR DISPENSING POWDERED MATERIAL

Stephen G. Hauser, Tarzana, and Keith S. Keith, Los Angeles, both of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Sep. 14, 1977, Ser. No. 833,184
Int. Cl.[2] G01F *11/24*
U.S. Cl. 222—181 7 Claims



1. A two piece molded dispenser comprising a housing provided with an upstanding top portion having an upwardly extending wall for retaining an inverted container of particulate material to be dispensed, said housing having a funnel means terminating in an orifice, journalling means in said housing positioned below said funnel means, and stop means positioned below at least a portion of said funnel means; and an integrally formed dispensing means including horizontal stub means and at least one elongated leaf spring means, said dispensing means having a normally upwardly facing open trap chamber means and being in receiving relationship with said orifice, said dispensing means having a downwardly depending manually operated lever means, said trap chamber means of said dispensing means having said horizontal stub means positioned for rotatable mounting in said journalling means, said at least one elongated leaf spring means extending at one end from said stub means and the other end having a portion in

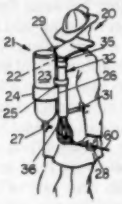
abutment with said stop means, said leaf spring being in a non-tension position when said trap chamber of said dispensing means is in a non-dispensing position, and said trap chamber means having a rear wall which cooperates with said orifice in the non-dispensing position of said trap chamber to prevent particulate material from spilling out of said trap chamber and to close said orifice in the dispensing position of said trap chamber.

4,161,266

LIFELINE CARRIER

William F. Howarth, Jr., 48 Ashland Ave., Methuen, Mass. 01844

Filed Nov. 4, 1976, Ser. No. 738,713
Int. Cl.[2] A45C *11/00*
U.S. Cl. 224—215 **8 Claims**



1. In combination with a back frame having a cylindrical air tank retained thereon by at least one strap partially encircling said tank midway of the height thereof;

a life line carrier for firemen said carrier comprising:

an elongated hollow container having a closed, upper end, an opposite open lower end and a side wall;

an end closure hinge pivoted to said container for closing said lower open end;

spring means, operably connected to said end closure and biasing said closure to open position;

first latch means, including a handle, on said container for retaining said spring biased end closure in closed position over said open end until manually unlatched;

an elongated line closely packed within said container, as a festoon coiled, elongated unitary package; said line being accessible proximate said open end and adapted to be slidably withdrawn as a unitary package endwise from said lower end of said container when said closure is opened;

a pig tail encircling the adjacent loops at the lower end of said festooned, close packed line proximate said open end and having a portion adapted to project from said container when said closure is opened for slidably withdrawing said package;

an elongated straight blade having one end fixed to the side wall of said container, proximate said closed upper end, said blade extending in substantial parallelism with said side wall at a spaced distance therefrom toward the open end thereof to a free terminal end and

second latching means on said side wall releasably connecting said free terminal end of said blade to said side wall, proximate said open lower end,

said straight balde being slidable downwardly between the tank strap and the air tank of a conventional back carried air tank to position said life line carrier alongside said tank

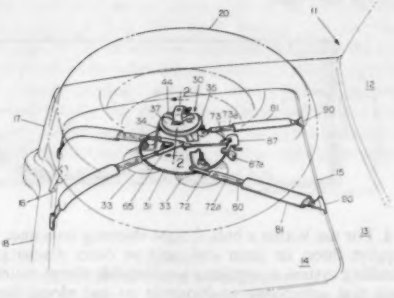
and actuation of said handle springing open said closure to permit slidable withdrawal endwise of said closely packed line as a unitary package.

4,161,267

TRUNK MOUNT SPARE WHEEL CARRIER DEVICE

Frederick D. Morrison, Jr., 5741 Acres Rd., Sylvania, Ohio 43560

Filed Jun. 6, 1977, Ser. No. 803,780
Int. Cl.[2] B62D *43/02*
U.S. Cl. 224—42.24 **9 Claims**



1. A spare wheel carrier for releasable securement to an automobile trunk lid having perimetric edges surrounding an upper surface, said wheel having an inner annular hub flange region, said carrier comprising:

a base member having depending means adapted to rest on the upper surface of said trunk lid,

an upstanding central support means, connected to said base member, having an upper horizontal face, adapted to flushly support said wheel on said inner annular hub flange region,

a lock plate adapted to rest on the other side of said annular hub flange region,

means for urging said support means face and lock plate together to thereby compressingly secure said hub flange region therebetween,

a plurality of elongate flexible holding straps secured at one end to said base member, said straps extending without entanglement or interference with said spare wheel to releasably engage said perimetric edges.

a yoke to which two of said plurality of said straps are connected and

means for affecting movement of said yoke and consequent adjustment of the tension in said two straps.

4,161,268

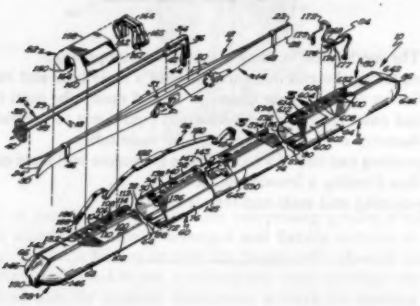
SKI STORING, PROTECTING, AND CARRYING APPARATUS

Charles W. Heil, 1629 Hickory La., Eagan, Minn. 55122

Filed Aug. 5, 1976, Ser. No. 711,848
The portion of the term of this patent subsequent to Nov. 25, 1992, has been disclaimed.
Int. Cl.[2] B65D *7/24;* A63C *11/02*
U.S. Cl. 224—45 S **27 Claims**

1. Apparatus for storing, protecting, and carrying a first snow ski and a second snow ski with the first ski having a bottom surface, an end, two sides, and a tip formed on the forward portion of the snow ski and curved from the bottom surface and with the second ski having a bottom surface, an end, two sides, and a tip formed on the forward portion of the snow ski and curved from the bottom surface with the bottom surface of the first ski adjacent to and facing the bottom surface of the second ski, comprising, in combination: a rigid, hollow, thin-walled elongated container having a first closed end and a second closed end spaced from the first closed end, with the container also including at least a first portion and a second portion being in a telescopic relation; and means for telescopically capturing the first and second snow skis within the container when the second portion is telescoped with the first

portion to prevent longitudinal movement of the first and second snow skis within the container and for allowing the container to be used for several length of skis, comprising: first means for engaging and holding the end of the first snow ski; second means for engaging and holding the end of the second snow ski; and third means for retaining the tip of the first snow ski and the tip of the second snow ski to prevent latitudinal movement in a direction perpendicular to the longitudinal axis of the container and for centrally aligning the forward portions of the first and second snow skis within the container when the second portion is telescoped with the first portion comprising: fourth means for urging the tip of the first snow ski in a latitudinal direction perpendicular to the longitudinal axis of the container; fifth means for urging the tip of the second snow ski



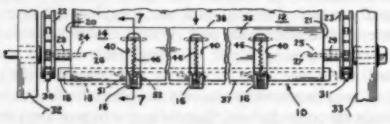
in a latitudinal direction perpendicular to the longitudinal axis of the container; sixth means for limiting movement of the first snow ski in a direction opposite to the latitudinal direction which the first snow ski is urged by the fourth urging means; and seventh means for limiting movement of the second snow ski in a direction opposite to the latitudinal direction which the second snow ski is urged by the fifth urging means, with the sixth and seventh means comprising a limiting member formed integrally with the container against which one side of each of the first and second snow ski abut to thereby removably capture the first and second snow skis within the container when the second portion is telescoped with the first portion to prevent the skis from bouncing, rattling, or moving inside the container during transit.

4,161,269

WEB CLAMP

Alan D. Kirkpatrick, Sparta, N.J., assignor to Corrugated Development, Inc., Fairfield, N.J.

Filed Nov. 21, 1977, Ser. No. 853,240
Int. Cl.[2] B65H *29/04*
U.S. Cl. 226—92 **10 Claims**



1. A clamp for carrying the edge of a web of material comprising:

a base bar;

at least one clamping element pivotally secured to said base bar said at least one clamping element being pivotable between clamping, release and loading positions;

spring means connected to said base bar and said clamping element, said spring means for urging said clamping element into said clamping position and also for urging said clamping element into said loading position; and

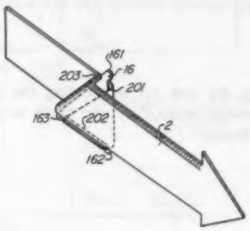
camming means slidably engaging said at least one clamping element, said camming means for displacing said at least one clamping element from said clamping position to said release position against the force of said spring means.

4,161,270

CONTINUOUS LOOP STUFFER CARTRIDGE HAVING IMPROVED MOEBIUS LOOP TENSIONING DEVICE

Ross H. Casey, Meridian, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 15, 1977, Ser. No. 815,976
Int. Cl.[2] B65H *17/50, 23/32*
U.S. Cl. 226—118 **9 Claims**



1. Apparatus comprising:

a reservoir having a capacity for holding tape;

an output port coupled to the reservoir and having an orifice for dispensing tape;

an input port coupled to the reservoir, and having an orifice for receiving tape;

a triangular-shaped tensioning device positioned within the output port, the triangular-shaped tensioning device having three frictional edge surfaces comprising a first edge surface, a second edge surface and a third edge surface, each of the three edge surfaces being substantially disposed within a plane defined by the other two edge surfaces;

a continuous loop tape having a Moebius half twist therein disposed about the first edge surface, the second edge surface and the third edge surface of the triangular-shaped tensioning device and the tape having a portion within the reservoir and a portion extending from the output port to the input port; and

tape moving means positioned within the input port for creating a tensile force within the portion of the continuous loop tape disposed outside the reservoir and extending from the triangular-shaped tensioning device to the tape moving means and for injecting tape received by the input port into the reservoir.

4,161,271

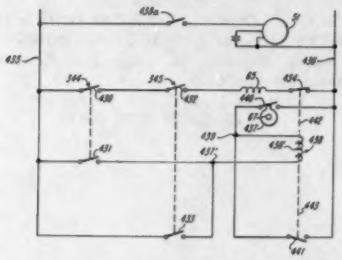
PINNING MACHINE

Charles B. Bussard, Kettering, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 789,763, Apr. 22, 1977, abandoned, which is a continuation of Ser. No. 641,842, Dec. 18, 1975, abandoned. This application Dec. 27, 1977, Ser. No. 864,552
Int. Cl.[2] B31F *7/00*
U.S. Cl. 227—8 **4 Claims**

1. Apparatus for pinning tags to merchandise, comprising: an anvil, a plunger cooperable with the anvil, means for feeding a tag along a path to a position between the anvil and the plunger, means for moving the plunger and the anvil relatively toward each other to hold the tag and the merchandise in a bent orientation at a pinning zone, means for driving a pin through the tag and the merchandise to pin the tag to the merchandise, a pair of independently movable actuators disposed on opposite sides of the pinning zone adjacent the anvil and the plunger, the means effective only when both actuators are simultaneously in their operated positions, for operating

the tag feeding means, the plunger and the pin driving means through an operating cycle, wherein the operating means includes a camshaft, a cam secured to the camshaft, and means



controlled by the cam for preventing the operation of the apparatus through more than one cycle until both actuators have been released.

4,161,272

NAIL DRIVER CONSTRUCTION

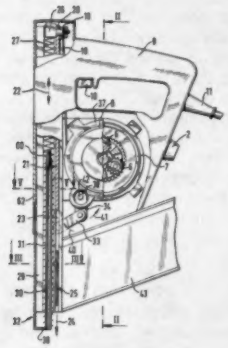
Walter Bröckl, Oberndorf-Aistaig a.N., Fed. Rep. of Germany, assignor to Mafell-Maschinenfabrik Rudolf Mey KG, Fed. Rep. of Germany

Filed Nov. 29, 1977, Ser. No. 855,731

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1976, 2654521

Int. Cl.[2] B25C *7/06*

U.S. Cl. 227—131 **19 Claims**



1. A nail driver, comprising a housing having a nail guide therein, a striking bar movable in said housing for driving the nail out of said nail guide, a motor in said housing, a coupling mechanism connected to said motor including a rotatable pulley driven by said motor, an intermediate member connected between said coupling mechanism and said striking bar for converting the rotary motion of the motor into an infeed movement of the striking bar including a flexible tape having one end secured to said striking bar and an opposite end connected to said pulley and being wound around said pulley for being driven thereby to move said striking bar, and a disconnecting mechanism connected to said coupling mechanism for disengaging the coupling mechanism after the stroke of said striking bar automatically.

4,161,273

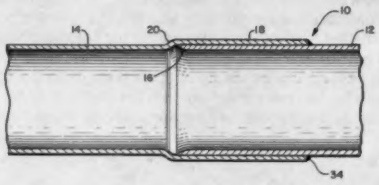
TUBE JOINT AND METHOD OF MAKING SAME

Robert P. Jeffers, Kinsman, Ohio, assignor to Youngstown Sheet and Tube Company, Youngstown, Ohio

Filed Feb. 22, 1977, Ser. No. 770,679

Int. Cl.[2] B23K *1/18*

U.S. Cl. 228—154 **3 Claims**



1. The method of forming a tube joint comprising:

chamfering the end outer diameter of a male tube and then flaring the end inner diameter of said male tube until the end outer diameter is substantially equivalent to the outer diameter of the remainder of said male tube;

expanding one end of a second tube to receive said male end, thus forming a female end; and

connecting said male and female ends.

4,161,274

DOOR PANEL FOR MAIL BOX UNIT

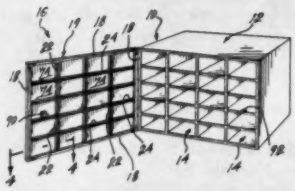
Allan T. Bishop, Senneville, and Maurice Wytruk, La Salle, both of Canada, assignors to Accessories Manufacturers, Ltd., Montreal, Canada

Filed Jan. 6, 1978, Ser. No. 867,460

Claims priority, application Canada, Oct. 24, 1977, 289377

Int. Cl.[2] B65D *91/00;* **F16B** *12/00*

U.S. Cl. 232—24 **7 Claims**



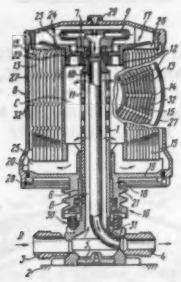
1. A door panel for covering the open face of a mail box having a series of individual mail receiving compartments, comprising, in combination: a peripheral frame adapted to be hingedly mounted to said mail box; a grid structure consisting of interlocked horizontal and vertical channel members, each member comprising a pair of transversely spaced walls connected along one edge thereof by and integral with a web; a first of said interlocked channel members having at least one opening through the web thereof and a pair of slots longitudinally spaced in each of said walls and contiguous with said opening to define oppositely disposed wall projecting portions extending toward said opening; a second of said channel members interlocked with said first channel member having a pair of longitudinally spaced slots in each of the walls thereof, said slots extending from the free edge of said walls to a distance thereon less than the overall width of each said wall to define a pair of oppositely disposed tongues, said tongues being deformingly bent inwardly in the channel of said first channel member thereby securing said first and second channel members together.

4,161,275

CENTRIFUGAL LIQUID CLEANER

Viktor A. Berber, Shelkovichnaya ulitsa, 184, kv. 65; Vladimir I. Mozyakov, Shelkovichnaya ulitsa, 190, kv. 47, and Nikolai A. Khodosov, Oktyabrsky poselok, 6 linia, 36, all of Saratov, U.S.S.R.

Filed May 24, 1978, Ser. No. 909,294
Int. Cl.[2] B04B *11/02*
U.S. Cl. 233—31 3 Claims



1. A centrifugal liquid cleaner comprising: a base; a hollow axle which is vertically arranged and fixedly secured to said base, said axle having an inlet for liquid to be cleaned and an outlet for cleaned liquid; a cylindrical rotor mounted on said hollow axle for rotation thereabout; a drive for rotating said cylindrical rotor; said cylindrical rotor having: an upper impeller and a lower impeller, a sleeve coaxial with said hollow axle mounted between said upper and lower impellers and connected thereto for combined rotation, a band of a height substantially equal to the sleeve height having one end fixed to said sleeve and wound thereon in the form of a spiral, spacers arranged in a succession in the radial direction between the turns of the spiral of said band in parallel with said hollow axle, apertures for the passage of cleaned liquid defined by said spacers and said band; ridges provided longitudinally on said band vertically spaced along its height and cambering towards said hollow axle, a casing connected to said upper and lower impellers to close said sleeve and band, and upper and lower impellers, spaces in said casing between the end faces of said sleeve and band and said upper and lower impellers, one of said spaces communicating with the inlet and the other with the outlet of said hollow axle, said spaces communicating with each other through said apertures; a pressurizing disk mounted in said casing on said hollow axle above the upper impeller.

4,161,276

COMPLEX LOGICAL FAULT DETECTION APPARATUS AND METHOD

Eric Sacher, Phoenix, Ariz., and Thomas E. Trebelhorn, San Diego, Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 1, 1978, Ser. No. 882,518
Int. Cl.[2] G06F *11/00*
U.S. Cl. 235—302 8 Claims

1. The method of testing a logic circuit having a binary input thereto and a binary output therefrom for error producing malfunctions comprising the steps of:

(a) applying a plurality of preselected binary test patterns to the input of a first known good identical logic circuit according to a preselected sequence;

(b) counting the number of transitions in logic state of the output of the first known good identical logic circuit from the application of each binary test pattern until a stabilized output state is reached;

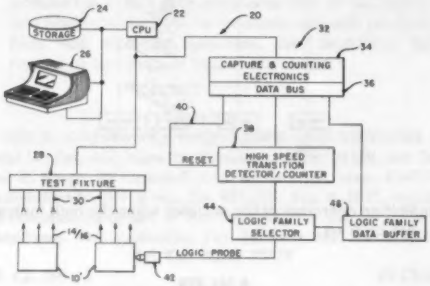
(c) saving the number of transitions counted and the logic state of the stabilized output for each binary test pattern of the first known good identical logic circuit;

(d) applying the plurality of preselected binary test patterns of step (a) to the input of a second known good identical logic circuit according to the sequence of step (a);

(e) counting the number of transitions in logic state of the output of the second known good identical logic circuit from the application of each binary test pattern until a stabilized output state is reached;

(f) comparing the transitions counted and final logic state of the first known good identical logic circuit to those of the second known good identical logic circuit for each test pattern;

(g) tagging as an indeterminate value each transition count and logic state saved in step (c) which does not compare identically with the respective transition count and logic state determined for the second known good identical logic circuit;



(h) applying the plurality of preselected binary test patterns used in step (a) to the input of the logic circuit to be tested according to the sequence of step (a);

(i) counting the number of transitions in logic state of the output of the logic circuit being tested from the application of each binary test pattern until a stabilized output state is reached;

(j) comparing the transitions counted and final logic states as saved in step (c) and tagged in step (g) to those of the logic circuit being tested for each test pattern; and,

(k) indicating an error condition if either the compared transitions count or final logic state associated with a test pattern is not identical.

4,161,277

IMPROPER COPY RUN PROGRAM ENTRY CHECK FOR ELECTROSTATIC TYPE REPRODUCTION OR COPYING MACHINES

Edward L. Steiner, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

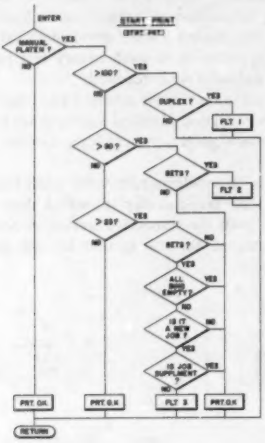
Filed Aug. 30, 1977, Ser. No. 829,021
Int. Cl.[2] G06F *11/00*
U.S. Cl. 235—304 4 Claims

1. In a reproduction machine for producing impressions of an original, the reproduction machine having a photosensitive member and a plurality of discrete operating components cooperable with one another and the photosensitive member to electrostatically produce the impressions on support material, the method of checking for an improper copy run instruction entry to the reproduction machine comprising the steps of:

inputting instructions to the reproduction machine for a copy run to be accomplished by the photosensitive member and the plurality of discrete operating components, the instruction depending upon at least one predetermined operating condition of one of the machine operating components,

checking said one operating component to determine the readiness of the operating condition,

setting a fault indicator if said condition has not been satisfied, and



inhibiting operation of the machine when the fault indicator has been set.

4,161,278

THERMALLY-CONTROLLED VALVE FOR A STEAM TRAP

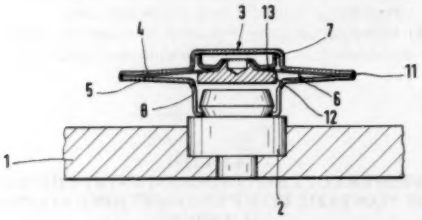
Holm Klann, and Josef Lingnau, both of Bremen, Fed. Rep. of Germany, assignors to GESTRA-KSB Vertriebsgesellschaft mbH & Co., Bremen, Fed. Rep. of Germany

Filed May 23, 1977, Ser. No. 799,482

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1976, 2630038

Int. Cl.[2] F16T *1/02*

U.S. Cl. 236—56 **2 Claims**



1. A thermally-controlled valve for a steam trap and the like, having a valve seat, comprising:

a thermally-controlled element including an outer wall portion, an inner wall portion, and a flexible separating wall therebetween, said flexible separating wall comprising a plurality of superimposed membrane lamellae which flex together in the same direction, the outer edges of which and said wall portions are exclusively rigidly welded together, said separating wall and said outer wall portion defining therebetween a receiving chamber for accomodating an expanding medium, said element also including a clamping disk disposed within said chamber and a reciprocably-movable locking member disposed between said separating wall and said inner wall portion for cooperative engagement with the valve seat, said membrane lamellae being rigidly clamped between said clamping disk and said locking member to effect movement of said locking member relative to the valve seat, said locking member having a central cavity and an annular shoulder having an outer generally truncated, cone-shaped circumferential surface which surrounds said cavity and abuts said separating wall and wherein said clamping disk and said membrane lamellae are provided with correspondingly disposed central bores, and complimentary-shaped surfaces opposite said outer circumferential surface of said annular shoulder, said locking member, clamping disk, and membrane lamellae being exclusively rigidly welded together at their adjacent bore or shoulder edges, respectively.

4,161,279

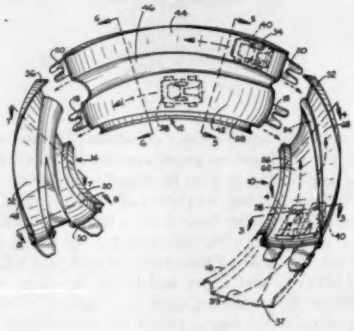
CURVED TRACK SECTION FOR TOY VEHICLE

Wayne R. Halford, Manhattan Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 22, 1977, Ser. No. 863,473

Int. Cl.[2] A63H *18/02*

U.S. Cl. 238—10 F **5 Claims**



1. In a toy vehicle track configured for traversal thereover of at least one self-propelled toy vehicle, the combination comprising:

a trackway being curved as seen in plan view and banked at an angle which increases from the inside of said plan curve to the outside thereof, said trackway having an entrance end and an exit end and having a track width sufficient for two vehicles side by side;

wall means on the outside of said trackway and shoulder means on the inside of said trackway for maintaining said vehicles thereon;

first means within at least a portion of said trackway for dividing said trackway into first and second lanes; and nonmovable abutment means integrally formed within said trackway adjacent said entrance end from a point adjacent said wall means along a curved path to a position generally intermediate said wall means and said shoulder means for selectively permitting said vehicle to enter one of said first and second lanes in response to the speed of entry or the angle of entry of the toy vehicle at said entrance end of said trackway, said abutment means having at least a portion thereof configured for passage thereover by a toy vehicle having sufficient momentum.

4,161,280

METHOD AND APPARATUS FOR DISPENSING A DEICER LIQUID

Michael M. Kasinskas, Cheshire, Conn., assignor to State of Connecticut, Hartford, Conn. and United States of America, Washington, D.C., part interest to each

Filed Oct. 13, 1977, Ser. No. 841,749

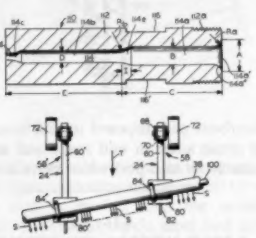
Int. Cl.[2] E01H *10/00*

U.S. Cl. 239—1 **17 Claims**

1. A method of applying a deicer liquid to frozen water on a ground surface comprising the steps of:

(a) pressurizing a brine solution to at least about 14.0 kg/cm^2;

(b) supplying the pressurized liquid of step (a) to a plurality of liquid directing nozzles having a body portion in which is provided a liquid passage terminating in a generally circular discharge opening, said liquid exiting from said discharge openings as coherent laminar streams of liquid having a generally cylindrical configuration and a turbulent outer boundary layer;



(c) orienting said nozzles relative to the ground surface to direct said streams of liquid onto the frozen water at an incident angle to the ground surface of between about one to five degrees; and

(d) moving said nozzles and thereby said streams of liquid across said ground surface in a direction generally parallel thereto and whereby movement of said nozzles increases the relative velocity at which said streams impinge upon said frozen water.

4,161,281

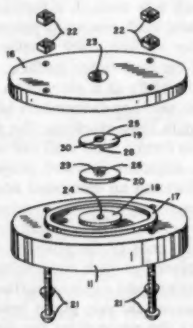
PNEUMATIC NEBULIZER AND METHOD

Elisha W. Erb, 444 Main St., Leominster, Mass. 01420, and Darrel R. Resch, 18 Campbell Ave., Leominster, Mass. 01453

Continuation-in-part of Ser. No. 718,647, Aug. 30, 1976, abandoned. This application Aug. 4, 1977, Ser. No. 821,374

Int. Cl.^{2} B05B *17/04*

U.S. Cl. 239—8 **49 Claims**



40. Method for reducing a flowable liquid to an ultrafine dispersion of liquid particles in a propellant gas comprising the steps of:

(a) confining a flowable liquid within a chamber having as the only means for escape at least one orifice comprising the entrance opening of at least one shallow passage present between two superposed members, the surfaces of which conform to and supportingly engage each other over a substantial portion of the surface areas of each surrounding said passage, said passage having an exit orifice which is sufficiently small that when filled with liquid the liquid is retained therein by capillary attraction and is prevented from flowing therefrom under ambient conditions except as liquid is supplied to the orifice,

(b) applying pressure to said liquid to cause a controlled supply of said liquid to flow through said exit orifice as a continuous thin liquid stream having a thickness of about 0.010 inch or less onto a filming surface having some affinity for said liquid whereby said liquid forms a thin continuous liquid film on said filming surface extending from said exit orifice to an edge of said filming surface which is spaced from said exit orifice, and

(c) applying pressure to cause a supply of gas to flow at sufficient velocity through a gas orifice which communicates with said edge of said filming surface and at an angle to and against said continuous liquid film which extends to said edge independently to the effect of said gas flow, thereby causing said continuous liquid film to become stretched at a very thin continuous film of said liquid on said filming surface and to be drawn into said gas flow to form said ultrafine dispersion, said dispersion being formed as said gas and liquid make contact.

4,161,282

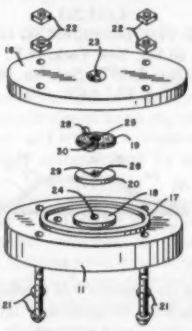
MICROCAPILLARY NEBULIZER AND METHOD

Elisha W. Erb, 444 Main St., Fitchburg, Mass. 01420, and Darrel R. Resch, 18 Campbell Ave., Leominster, Mass. 01453

Continuation-in-part of Ser. No. 821,374, Aug. 4, 1977, which is a continuation-in-part of Ser. No. 718,647, Aug. 30, 1976, abandoned. This application Feb. 21, 1978, Ser. No. 879,165

Int. Cl.^{2} B05B *17/04*

U.S. Cl. 239—8 **45 Claims**



1. A nebulizer device capable of reducing a flowable liquid to an ultrafine dispersion of liquid particles in a propellant gas, comprising a mixing element comprising (a) a microporous member having a multiplicity of liquid passages therethrough, said passages having entrance orifices adapted to receive a supply of said flowable liquid and exit orifices sufficiently small that when filled with said liquid, the liquid is retained therein by capillary attraction and is prevented from flowing therefrom under ambient conditions except as liquid is supplied through said liquid passages to said exit orifices, (b) a filming surface communicating with said exit orifices and having some affinity for said liquid, and (c) a gas orifice comprising an edge of said filming surface spaced from said exit orifices and communicating with a gas conduit adapted to transmit a supply of gas through said gas orifice, whereby liquid which flows through said liquid passages is adapted to exit said exit orifices as thin liquid streams which adhere to said filming surface as a continuous thin liquid film which extends to the edge of said filming surface comprising said gas orifice where the thin liquid film is adapted to be drawn into the gas flowing through said gas passage, the drawing of said liquid film into said gas flow causing said film to be stretched across said filming surface as a very thin continuous film of said liquid for introduction into said gas flow to form said ultrafine dispersion.

37. Method for reducing a flowable liquid to an ultra-fine dispersion of liquid particles in a propellant gas comprising the steps of:

(a) confining a flowable liquid within a microporous element comprising a multiplicity of microscopic liquid passages having entrances communicating with a supply of liquid and having as the only means for escape a multiplicity of exit orifices sufficiently small that when filled with liquid, the liquid is retained therein by capillary attraction and is prevented from flowing therefrom under ambient conditions except as liquid is supplied to said exit orifices,

(b) causing said flowable liquid to flow into said entrances, through said liquid passages and out of said exit orifices onto a filming surface having some affinity for said liquid whereby said liquid forms a thin continuous liquid film having a thickness of about 0.01 inch or less on said filming surface extending from said exit orifices to an edge of said filming surface which is spaced from said exit orifices, and

(c) causing a supply of gas to flow at sufficient velocity through a gas orifice which communicates with said edge of said filming surface and against said continuous liquid film which extends to said edge, thereby causing said continuous liquid film to become stretched as a very thin continuous film of said liquid on said filming surface and to be drawn into said gas flow to form said ultra-fine dispersion.

4,161,283

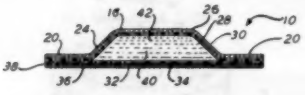
ARTICLE FOR THE DISPENSING OF VOLATILES

Sy Hyman, 425 E. 58 St., New York, N.Y. 10022

Filed Jun. 3, 1977, Ser. No. 803,369

Int. Cl.[2] A61L *9/04*

U.S. Cl. 239—55 **19 Claims**



19. An article for the dispersion of a volatile substance to the surrounding atmosphere comprising a layer of a molecular diffusion polymer and a layer substantially impervious to molecular diffusion, said layers being heat bonded to each other along their respective peripheral portions to form a reservoir portion for containing a liquid volatilizable substance, another layer substantially impervious to molecular diffusion overlying said molecular diffusion layer, whereby the liquid volatilizable substance may diffuse through the first said layer to the surrounding atmosphere.

4,161,284

SLOW DIFFUSER-AIR SCENT

Horace E. Rattan, P.O. Box 287, El Centro, Calif. 94423

Filed Feb. 9, 1978, Ser. No. 876,536

Int. Cl.[2] A24F *25/00*

U.S. Cl. 239—43 **4 Claims**

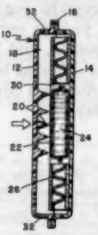
1. A fragrance dispensing packet comprising:

(a) an outer container having a pair of semi-rigid walls spaced apart to define a space therebetween;

(b) a rupturable pod containing an evaporable fragrant substance disposed in said space;

(c) at least one of said walls being yieldable adjacent said space;

(d) at least one of said walls having an inwardly directed spike adjacent said pod to rupture same upon said walls being compressed together; and



(e) an absorbent pad disposed in said container around said pod to retain same in said space and absorb the fragrant substance from said pod when same is ruptured.

4,161,285

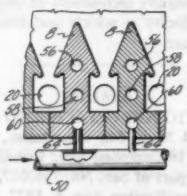
LASER NOZZLE CONSTRUCTION

Paul Matheny, Tequesta, and Joe T. Akin, Jupiter, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 22, 1977, Ser. No. 863,494

Int. Cl.[2] B05B *15/00*

U.S. Cl. 239—132.3 **6 Claims**



1. A laser nozzle comprising a plurality of stacked elongated nozzle members, each nozzle member having two elongated projections on each side thereof, a forward projection and a rearward projection, each rearward projection being formed having a flat outer surface, each forward projection being formed having a tapered outer surface, said tapered outer surface tapering inwardly as it extends to the forward end of the nozzle member, said nozzle members being placed adjacent each other so that in their stack the flat surfaces of the rear projections meet to form a solid wall and said forward projections are spaced, adjacent forward projections of adjacent nozzle members forming an elongated nozzle, a cavity being formed between each pair of meeting rearward projections and spaced forward projections of adjacent nozzle members, side plates enclosing the ends of the plurality of nozzle members, end plates being placed at each end enclosing the ends of the cooperating side plates and exposed surface of the end nozzle members, openings in said side plates being connected to the cavities formed by the projections for directing a lasing gas thereto.

4,161,286

SELF-COMPENSATING NOZZLE CONSTRUCTION

John D. Beamer, West Covina, and William J. Wichman, Glendora, both of Calif., assignors to Rain Bird Sprinkler Manufacturing Corporation, Glendora, Calif.

Filed Oct. 25, 1977, Ser. No. 844,659

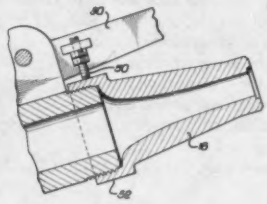
Int. Cl.[2] B05B *3/14*

U.S. Cl. 239—230 **3 Claims**

1. In a part-circle water sprinkler having a sprinkler body, a replaceable nozzle from which a continuous stream of water is ejected, a forward drive arm to provide incremental angular

movement in a forward direction, and a reverse drive arm movable into the water stream to provide a reverse movement, the improvement comprising:

first means, located on said nozzle, to limit the extent of movement of said reverse drive arm into the water stream, to a degree dependent upon the nozzle size; and



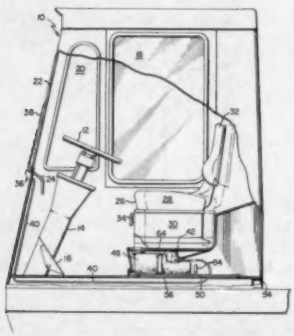
second means, located on said reverse drive arm, to abut said first means and thereby determine the extent to which said reverse drive arm is moved into the water stream, whereby larger or smaller nozzle sizes and correspondingly larger or smaller stream diameters will not substantially affect the acceleration force provided by said reverse drive arm.

4,161,287

VEHICLE LIQUID WINDOW WASHER BOTTLE AND ENCLOSURE

William J. Brown, Naperville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 8, 1977, Ser. No. 814,236
Int. Cl.[2] B05B *3/18*
U.S. Cl. 239—284 R **5 Claims**



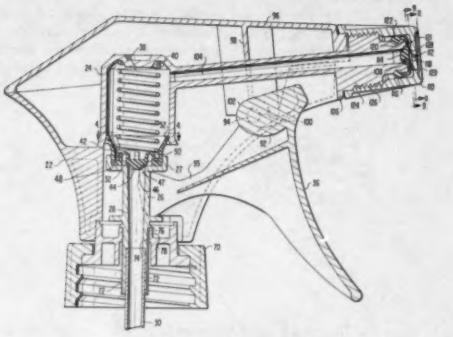
1. An enclosure for a bottle adapted to contain a liquid for dispensement therefrom, said enclosure including surrounding walls, an upper one of said walls having a hole there-through, a bottle mounted on a bottom said wall and being securely attached thereon, said bottle including a neck extending therefrom and intercommunicating with the interior of the bottle, said neck extending through said hole and having a filling opening at the end thereof, a dispensing tube connected to said bottle, said neck having a bead thereon intermediate said filling opening and the body of said bottle, a resilient sealing annulus disposed between said bead and the underside of said upper wall and sealing the interior of said enclosure from the exterior, a filling opening closure cap having a lower annular portion resiliently engaged and sealed in said filling opening, said cap having a flange thereon above said lower annular portion, said flange being engageable over said hole in said upper wall and being in sealing engagement with the upper surface of said upper wall, and effecting a continuous seal extending from the neck terminal end, over the upper wall hole and the upper surface of said upper wall, said cap lower portion and said flange additionally coacting with said enclosure and said bottle neck to substantially eliminate movement of said bottle neck with respect to the upper wall hole in said enclosure.

4,161,288

FLUID DISPENSER METHOD AND APPARATUS

James C. McKinney, Atlanta, Ga., assignor to Creative Dispensing Systems, Inc., Atlanta, Ga.

Filed Oct. 5, 1976, Ser. No. 729,798
Int. Cl.[2] B65D *47/34*
U.S. Cl. 239—333 **26 Claims**



1. An apparatus for dispensing fluids from a container comprising:

a housing;

a trigger;

means for pivotably mounting said trigger to said housing including a member configured in an open spiral on one of said housing and said trigger and a peg on the other one of said housing and said trigger configured for disposition within the interior space defined by said spiral shaped member;

a pump chamber having a piston movable through a limited stroke responsive to said trigger for varying the volume of said pump chamber, whereby the limits of the piston stroke limit the pivoting movement of said trigger;

an outlet valve having a valve member for blocking communication with said chamber responsive to the pressure in said chamber;

a nozzle cap for adjustably contacting said outlet valve member to vary the discharge pattern of the fluid dispensed;

inlet conduit means attached to said piston and communicating with the container, providing a venting passage for the container selectively blocked by mating surfaces on said conduit means and container responsive to movement of the piston; and

a flexible member slidably contacting the wall of said pump chamber for blocking communication between said pump chamber and said inlet conduit means responsive to the pressure in said chamber.

4,161,289

AIRBRUSH

Jerome I. Rebold, Timonium, Md., assignor to CBS Inc., New York, N.Y.

Filed Apr. 14, 1978, Ser. No. 896,252
Int. Cl.[2] B05B *7/30*
U.S. Cl. 239—346 **10 Claims**

1. An airbrush of the double-action type, comprising:

a unitary body including an elongated portion having forward and rearward ends and having an axial passage therein for a needle, and a cylindrical portion depending from an intermediate point of the elongated portion and

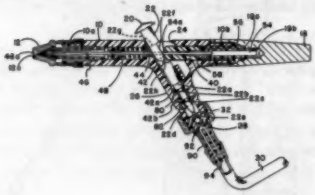
having a passage intersecting the axial passage in said elongated portion for receiving a finger-operated lever,

an internally tapered air cap threadably secured to the forward end of the elongated portion of said body,

a jet supported within and in fixed spatial relationship with said air cap,

a closure cap closing the rearward end of the elongated portion of said body adapted for longitudinal adjustment on said elongated portion and having an internal recess formed therein coaxially with said axial passage,

a needle having a tapered forward end supported in said axial passage for longitudinal movement therein, said needle being guided at a point forwardly of said intermediate point by paint-to-air sealing means disposed within said axial passage and secured at its other end to and guided by an elongated guide member a forward portion of the length of which is supported within said axial passage for longitudinal movement therein and a rearward portion of the length of which extends into the recess in said closure cap,



spring means cooperatively arranged with said closure cap and said guide member for normally biasing said needle to a position at which the tapered front end thereof is seated in said jet, and

a finger-operated lever supported in the passage in said depending cylindrical portion to engage the forward end of the forward portion of said guide member for moving the needle against the action of said spring means, the extent of movement being limited by engagement of the rearward end of the rearward portion of said guide member with the bottom of the recess in said closure cap, whereby the maximum opening of the airbrush is predeterminable by the adjusted position of the closure cap on the elongated portion of said body.

4,161,290

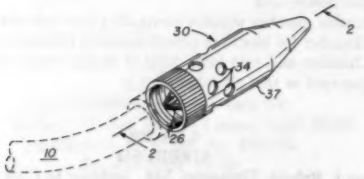
WATERING DEVICE

J. Ernest Hill, 3114 Linkwood, Houston, Tex. 77025

Continuation-in-part of Ser. No. 727,033, Sep. 27, 1976, abandoned. This application Nov. 29, 1977, Ser. No. 855,551

Int. Cl.[2] B05B *1/16*

U.S. Cl. 239—396 **2 Claims**



1. A device for controlling the flow of liquid, comprising:

a connector portion including;

a threaded skirt portion adapted for engagement with a liquid source,

web portion separating said threaded portion from the interior of a nipple member,

an axial bore of at least three sided configuration adapted to receive a movable disc between the walls of said skirt portion, and a lateral bore within said web portion in communication with said axial bore,

orifice means through said web portion in communication with said nipple member and said lateral bore,

movable disc member, correlative in diametrical configuration with said axial bore, having a said aperture being so spaced that only one may communicate with said lateral bore at one time, plurality of differently sized apertures therethrough, and

a nipple member adjacent said web portion opposite said connector skirt portion including;

deflector means at one end thereof,

at least one turbulence chamber adjacent said deflector means, and

aperture means through the wall of said nipple member.

4,161,291

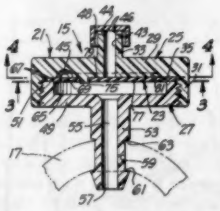
EMITTER

Clarence Bentley, 9256 Stamps Ave., Downey, Calif. 90240

Filed Nov. 1, 1978, Ser. No. 956,805

Int. Cl.[2] B05B *15/00*

U.S. Cl. 239—542 **10 Claims**



1. An emitter for use in drip irrigation comprising:

body means for defining an emitter chamber, said body means including a first surface defining at least a portion of said emitter chamber;

a resilient element having first and second opposite faces;

means for mounting the resilient element in said emitter chamber with said first face confronting and closely adjacent said first surface;

said first surface and said first face cooperating to define a restricted fluid passage;

said body means including an inlet for supplying fluid under pressure to the emitter chamber and the second face of the resilient element;

said resilient element having aperture means providing communication between said second face of said resilient element and said restricted fluid passage;

said body means including an outlet leading from said restricted fluid passage whereby fluid under pressure can pass from the inlet through said aperture means and said restricted fluid passage to said outlet; and

means on said resilient element at said aperture means for increasing the pressure drop across said resilient element whereby the pressure drop urges the resilient element against the first surface to maintain the integrity of the restricted fluid passage even at relatively low flow rates through the aperture means.

4,161,292

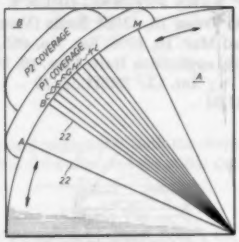
CENTER PIVOT IRRIGATION SYSTEM HAVING APPARATUS FOR IRRIGATING CORNERS

Huland L. Holloway, Melbeta, and Edward M. Norum, Jr., Gering, both of Nebr., assignors to Lockwood Corporation, Gering, Nebr.

Filed Mar. 17, 1977, Ser. No. 778,470

Int. Cl.[2] B05B *3/12*

U.S. Cl. 239—11 **15 Claims**



1. A center pivot irrigation system adapted to provide corner irrigation comprising:

(a) a main pipeline sprinkler rotatable about a center and having a plurality of main fluid discharge nozzles spaced therealong for controllably providing fluid to a central, generally circular area;

(b) a signal generator for producing a set of at least one control signal in response to and indicative of the rotational position of the main pipeline sprinkler;

(c) a drive mechanism for rotating the main pipeline sprinkler in response to the set of control signals, the drive mechanism rotating the main pipeline sprinkler at a substantially constant first rate for irrigating areas corresponding to non-corner orientations, and at an intermittent rate for irrigating areas corresponding to corner orientations, the intermittent rate defined in part by a zero rate period of predetermined duration during which the main pipeline sprinkler is not rotating; and

(d) an auxiliary sprinkler including at least first and second auxiliary nozzles disposed substantially at the end of the main pipeline sprinkler, the first auxiliary nozzle operated by the set of control signals for irrigating said corner areas only during said zero rate periods, and the second auxiliary nozzle being operated alternately of the first auxiliary nozzle by the set of control signals.

4,161,293

BLOWER BEATER MILL

Richard Beelmann, Mülheim; Johannes Kerstges, Oberhausen, and Paul Mertens, Mülheim, all of Fed. Rep. of Germany, assignors to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

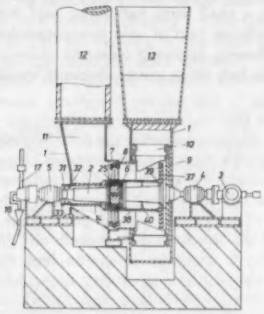
Filed Dec. 15, 1977, Ser. No. 860,768

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658469

Int. Cl.[2] B02C *13/10*

U.S. Cl. 241—56 **7 Claims**

1. A blower beater mill for grinding and drying, comprising: a mill shaft with hub rings; a rotor having a beater portion located on said mill shaft and having a fan impeller, said beater portion having beater arms; said beater arms of said beater portion being fastened in spaces between said hub rings of said mill shaft; said mill shaft being water-cooled along its longitudinal axis; said hub rings having shaft cams; and an outside jacket enclosing said shaft cams at a spaced distance therefrom;



said outside jacket having cutouts for passage of said beater arms.

4,161,294

BLOWER BEATER MILL

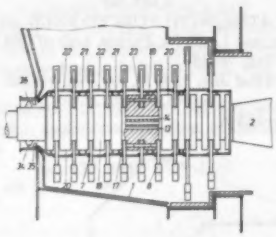
Friedrich W. Lautenschläger, Gechingen, and Hermann Hennecke, Mülheim, both of Fed. Rep. of Germany, assignors to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Dec. 19, 1977, Ser. No. 861,540

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1977, 2728750

Int. Cl.[2] B02C *13/10*

U.S. Cl. 241—56 **9 Claims**



1. A blower beater mill for grinding and drying, comprising: a mill shaft water-cooled along its longitudinal axis and having hub rings; a rotor having a beater portion located on said mill shaft and having a fan impeller; beater arms of a beater portion being fastened between said hub rings of said mill shaft; said hub rings having shaft crests; jacket means enclosing said shaft crests at a spaced distance therefrom; said jacket means comprising individual rings, said beater arms passing through said individual rings.

4,161,295

BLOWER BEATER MILL

Hermann Hennecke; Paul Mertens, both of Mulheim, and Josef Krecher, Dorsten, all of Fed. Rep. of Germany, assignors to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Dec. 15, 1977, Ser. No. 860,763

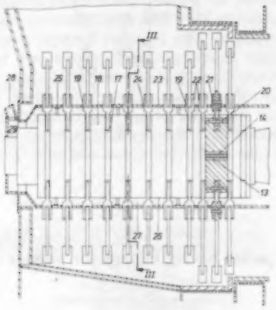
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658467

Int. Cl.[2] B02C *13/10*

U.S. Cl. 241—66 **10 Claims**

1. A blower mill, comprising: a rotor with a beater portion having beater arms comprising three interconnected parts; one

of said three parts comprising an intermediate portion having at one end thereof a beater arm base connected thereto; a beater head connected to another opposite end of said intermediate portion; a shaft with hub rings; said hub rings having peripheral surfaces; two of said interconnected parts of said beater arms having fastening elements above said peripheral surfaces of the hub rings; cover elements located axially with



said rotor in a free space between beater arm bases and radially at a distance above said peripheral surfaces of said hub ring; said cover elements being located on a diameter between said peripheral surfaces of said hub rings and said fastening elements of the beater arm parts; said three parts comprising said intermediate portion, beater arm base and beater head with connections of said three parts being above said cover elements.

4,161,296

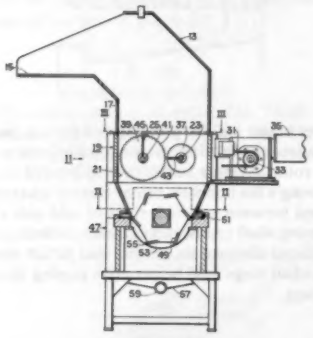
GRANULATOR WITH FORCED FEED ASSEMBLY

Frank Parker, and Leslie M. Parker, both of Old Brandon Rd., Hillsboro, Tex. 76645

Filed Jun. 9, 1978, Ser. No. 914,037

Int. Cl.[2] B02C *23/00*

U.S. Cl. 241—152 A **15 Claims**



1. In an apparatus for granulating articles into particles of the type having a chute with an entry for insertion of the articles to be granulated, and a grinder chamber in communication with the chute, the grinder chamber enclosing a plurality of rotor knives that are rotated past a stationary knife for cutting the articles and a perforated screen mounted below the rotor knives having apertures that allow the particles to pass through for collection, a force feeding means for urging the articles into the grinder chamber, comprising:

a force feeding chamber located between the grinder chamber and the entry of the chute;

a shaft extending across the force feeding chamber;

drive means for rotating the shaft;

a pair of plates mounted on the shaft for rotating therewith and spaced apart a selected distance; each plate having a plurality of teeth formed on at least a portion of its edge for grabbing and tearing the articles; and

a web mounted between the pair of plates for crushing and pushing the articles into the grinder chamber.

4,161,297

YARN FEEDING DEVICE

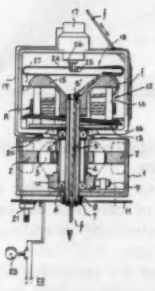
Sergio Vella, Via Trossi 10, 13051 Biella (Vercelli), Italy

Filed Mar. 10, 1976, Ser. No. 665,568

Claims priority, application Italy, Mar. 10, 1975, 21079 A/75

Int. Cl.[2] B65H *51/20*

U.S. Cl. 242—47.01 **9 Claims**



1. Yarn feeding device with constant adjustable tension, the yarn being fed from a yarn source to a yarn using device, particularly for use in weaving and knitting machines, of the type comprising: a fixed hollow body, around which the yarn coming from said source is wound into turns by an element rotating outwardly of said fixed body and coaxially thereto, to form thereon a yarn reserve from which the actual yarn is drawn, to be sent to said yarn using device, passing inside the fixed hollow body, adjustable brake means cooperating with said fixed body for braking the yarn with constant intensity, downstream of said yarn reserve; and means associated to the fixed hollow body, for adjusting and keeping even the amount of said yarn reserve; said yarn feeding device being characterized in that, the brake means comprise a round element, formed by a solid central part and by a peripheral part with radial blades, arranged between an electromagnet mounted on said rotary element for winding the yarn, and the outer edge of said hollow body onto which the yarn gets wound, said blades being elastically bent at their ends with which they engage said edge, and said electromagnet housing the end of its core into an appropriate seat provided at the centre of the solid part of said round element.

4,161,298

WINDING MACHINE

Daryl Davis, 3221 Tanglewood Trail, Fort Worth, Tex. 76109

Filed Apr. 11, 1978, Ser. No. 895,509

Int. Cl.[2] B65H *17/02*

U.S. Cl. 242—67.1 R **8 Claims**

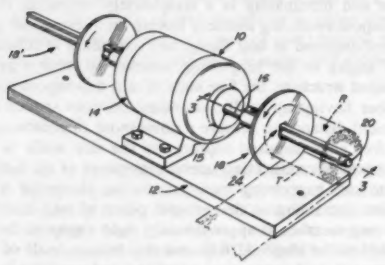
1. A winding machine, comprising, in combination:

(a) a shaft;

(b) connector means attached to the shaft for coupling the shaft to an associated drive shaft for rotation by the drive shaft, and

(c) guide means engageable with a tape being wound for guiding the tape as the shaft is rotated and causing the tape to wind on the shaft, the connector means including a cylindrical collar provided with a through bore arranged for receiving the associated drive shaft, the shaft of the

winding machine being partially inserted into the bore as well, and clamp means provided on the collar and engaging the shaft and engageable with the drive shaft for holding the shaft in the collar and the collar on the drive shaft.

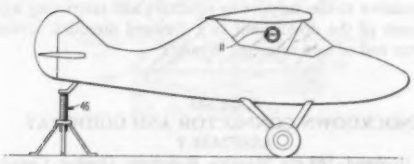


4,161,299

AIRCRAFT PERFORMANCE DATA QUALIFIER

Leonard F. Smisson, 1607 W. Michigan, Midland, Tex. 79701

Filed Apr. 20, 1978, Ser. No. 898,166
Int. Cl.[2] B64D *43/00*
U.S. Cl. 244—1 R **4 Claims**



1. A calibrated apparatus to obtain performance data for maximum cruise economy on aircraft and wherein the apparatus is mounted on the aircraft for viewing by the crew thereof, said apparatus comprising, a plurality of relatively thin, round, flat discs mounted concentrically with one another about a center point, said discs being rotatable with respect to one another, said rotatable concentrically mounted discs comprising an upper disc, a middle disc and a base disc, the upper disc and base disc being fixed to one another with the middle disc being rotatable with respect to the upper and base discs, indicating means positioned on the upper disc and being movable across the surface of said upper disc, the indicating means having a proximal end and a distal end wherein the proximal end is pivotally engaged with the upper disc, leveling means integral with the indicating means wherein said leveling means comprising a leveling bubble, the upper disc having an elongated aperture therethrough at a fixed radius from the center point, indicia means located in juxtaposition with said elongated aperture, said indicia means indicating a first set of flight parameters of the aircraft, the middle disc having indicia means located thereupon in cooperative relationship with the elongated aperture of the upper disc for viewing through said elongated aperture at predetermined times when said elongated aperture is positioned in juxtaposition with the middle disc, indicia means imprinted on the middle disc at a fixed radius from the center point adapted for viewing through said elongated aperture, said indicia means indicating a second set of flight parameters, the indicating means movable with respect to the elongated aperture of the upper disc and adapted to point to various indicia of the upper and middle disc, whereby to obtain maximum cruise economy using the previously calibrated apparatus the crew climbs the aircraft to a designated altitude and enters the first set of flight parameters, then enters the second set of flight parameters, then adjusts the indicating means to a predetermined setting relative to the second set of flight parameters, then adjusts power of the aircraft until the leveling bubble centers thereby indicating a condition of maximum cruise economy.

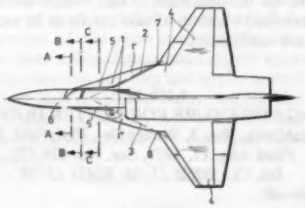
4. The method of obtaining performance data for maximum cruise economy on a aircraft utilizing a computer instrument mounted on an aircraft for viewing by the flight crew thereof, the instrument having three flat discs mounted concentrically about a center point and rotatable with respect to one another, an indicating means positioned on the first of said discs and being movable across the surface of said first disc, leveling bubble means integral with the indicating means, the first disc having an elongated aperture therethrough with indicia means located in juxtaposition with the elongated aperture indicating a first set of flight parameters of the aircraft, the second of said discs having indicia means located thereupon in cooperative relationship with the elongated aperture of the first disc for viewing through said elongated aperture at predetermined times, said indicia means indicating a second set of flight parameters, the indicating means movable with respect to the elongated aperture of the first disc and adapted to point to various indicia of the first and second discs, the method comrising the steps of, flying at a predetermined altitude with known relative wind and temperature, recording at selected air speeds of the aircraft the fuel flow and angle of attack, computing specific range against angle of attack, plotting air speed against specific range and angle of attack for each air speed point, determining from the plot the best air speed for maximum range of said aircraft, transferring the plotted points to the computer instrument, setting the first disc relative to the second disc to show current free air temperature and altitude, setting the indicating means to the effective relative wind, centering the bubble of the leveling means by power increases or reductions of the aircraft, thereby indicating maximum cruise economy.

4,161,300

CANARD TYPE AIRCRAFT

Hans Schwaerzler, Taufkirchen, and Werner Staudacher, Zorneding, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 12, 1977, Ser. No. 859,685
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656692
Int. Cl.[2] B64C *5/04, 5/10*
U.S. Cl. 244—45 A **7 Claims**



1. A canard type aircraft comprising fuselage means (6) having a longitudinal axis, wing means (4) operatively secured to said fuselage means, steering means (1', 1'') operatively secured to said wing means so that said steering means are tiltable about a tilting axis extending at an acute angle relative to said longitudinal axis of said fuselage means (6), said steering means (1', 1'') each comprising a first edge (5) facing the aircraft fuselage means (6), and a second edge (2, 3) facing the respective wing means (4), said first and second edges (2, 5; 3, 5) including an obtuse angle (α), said second wing means facing edge (2, 3) substantially defining said tilting axis, said fuselage means (6) having surface areas facing the first edge (5) of the respective steering means (1', 1''), said first edge having a shape substantially conforming to the shape of the respective fuselage surface area facing said first edge, said first edge being

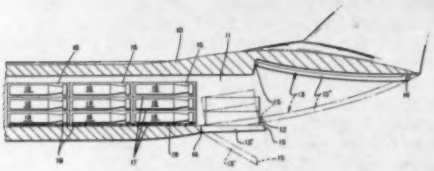
movable relative to said fuselage, whereby an effective sealing between said fuselage means and said first edge (5) facing said fuselage means (6) may be maintained substantially in all positions of said first edge relative to said fuselage means.

4,161,301

DEPLOYMENT APPARATUS FOR STORES FROM VEHICLES

Richard G. Beardsley, Gainesville, and Norman S. Currey, Atlanta, both of Ga., assignors to Lockheed Corporation, Burbank, Calif.

Filed Feb. 27, 1978, Ser. No. 881,175
Int. Cl.[2] B64D *1/10*
U.S. Cl. 244—137 R **10 Claims**



1. A deployment apparatus for stores from a vehicle during movement comprising:

at least one carrier pallet formed by a plurality of parallel cradles each adapted to receive and secure one of said stores;

releasable lock elements on each said pallet complemental to, for coaction with, lock elements on adjacent stationary structure of the vehicle operable to immovably secure said at least one pallet on said vehicle against relative movement;

releasable connector elements carried by each said pallet to permit the interconnection of each said pallet with another similar pallet in vertical alignment;

a drive mechanism engageable between each said pallet and cradle and operative to move said cradle linearly relative to said pallet;

releasable coupling elements carried by each said drive mechanism whereby each said pallet is connectable to another said pallet with the cradles thereof disposed in fore and aft alignment;

a releasable mechanism operative to permit movement of each said store relative to its cradle; and

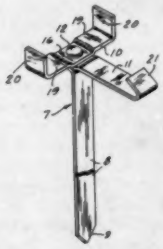
an actuator for the operation of said release mechanism at a predetermined location of said cradle in its movement by said drive mechanism.

4,161,302

RETAINING STRUCTURE FOR GUTTER DOWNSPOUTS

Frank A. Stuhlman, Rte. 3, Weller Dr., Plainfield, Ill. 60544

Filed Aug. 17, 1977, Ser. No. 825,221
Int. Cl.[2] B05B *15/06;* **E04D** *13/08*
U.S. Cl. 248—49 **6 Claims**



1. A supporting structure for a laterally extending terminal portion of a gutter downspout, comprising an elongated supporting member adapted to be disposed in the ground and extend upwardly therefrom, said supporting member having its upper end terminating in a transversely extending flange, a downspout-receiving member having an intermediate portion thereof disposed at said flange and extending at substantially right angles to the supporting member to form a generally T-shaped structure, the free ends of said downspout-receiving member having upwardly extending portions spaced apart a sufficient distance to receive a downspout therebetween with said free ends disposed adjacent to the side walls of such a downspout for restricting lateral movement of the latter relative to said supporting member, and an elongated retaining member extending in the general plane of said downspout-receiving member at approximately right angles to the latter, adapted to be disposed adjacent the bottom wall of such a downspout, said supporting, receiving and retaining members comprising individual members formed from flat strip stock, said retaining member having one end thereof disposed adjacent said T-shaped structure at the juncture of said supporting and downspout-receiving members, said flange, the intermediate portion of said downspout-receiving member, and the adjacent end of said retaining member being disposed one upon the other and secured together thereat to form a unitary structure, the opposite free end of said retaining member extending upwardly and rearwardly, whereby the end edge of the bottom wall of such a downspout may be disposed between said free end and the adjacent intermediate portion of said retaining member for restricting upward movement of such a downspout relative to the supporting structure and restricting axial movement of the downspout in a forward direction toward such free end of said retaining member.

4,161,303

KNOCKDOWN CONNECTOR AND GUIDEWAY ASSEMBLY

Pierre Bachand, 149 rue Maurice, Rosemere, Quebec, Canada

Filed Jan. 3, 1978, Ser. No. 866,772
Int. Cl.[2] A47G *29/02*
U.S. Cl. 248—246 **5 Claims**

1. A knockdown connector and guideway assembly wherein the guideway is a box-shaped channel having a back wall, side walls and co-planar flanges extending from the outer edges of said side walls towards each other and separated by a slot, of uniform width, extending longitudinally of said channel, the inside face of said back wall and the inside faces of said flanges being uniformly spaced-apart longitudinally of the channel, but the inside faces of said flanges diverging transversely of the channel from said side walls towards said slot with respect to the inside face of said back wall, and wherein the connector includes an elongated base member having a central portion and opposite end portions, said opposite end portions being flat and co-planar with opposed substantially parallel main flat faces, said end portions having a uniform thickness of a value lying between the maximum and minimum distance between the inside face of each flange and of the back wall, said base member having a width less than the width of said slot and a length greater than the width of said slot, said base member being insertable within said channel through said slot and being rotatable in said channel about an axis of rotation passing through said central portion and substantially perpendicular to

the inside face of said back wall to a blocked position wherein said end portions become wedged between the inclined inside surfaces of said flanges and the inside surface of said back wall with the back flat surface of said connector in close contact with the inside surface of the back wall of said channel, and a holding member secured to said base member and extending through said slot.

4,161,304

RUBBER ELASTIC ENGINE MOUNTS OR SUPPORTS WITH HYDRAULIC DAMPING, ESPECIALLY FOR ENGINE SUSPENSIONS IN MOTOR VEHICLES

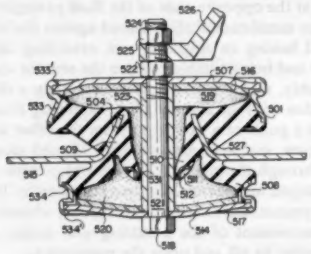
Heinz Brenner, and Arno Hamaekers, both of Ahrweiler, Fed. Rep. of Germany, assignors to BOGE GmbH, Eitorf, Fed. Rep. of Germany

Filed Apr. 27, 1977, Ser. No. 791,309

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1976, 2618333; Oct. 19, 1976, 2647105; Oct. 27, 1976, 2648526

Int. Cl.[2] F16F *15/04*

U.S. Cl. 248—562 **15 Claims**



1. An elastic rubber engine mount with hydraulic damping, especially for engine suspensions in motor vehicles, comprising a first metallic end wall for connection to an engine casing, a second metallic end wall spaced axially from said first wall, a metallic supporting element for connection to an engine supporting frame, a first elastic rubber-like peripheral wall adheringly connected with said first end wall and with said supporting element, a partition formed at least in major part of a flexible elastic rubber-like material and connected with said supporting element so as to define with said first end wall and said first peripheral wall a liquid-filled main chamber of variable volume on one side of said partition, a second elastic rubber-like peripheral wall adheringly connected with said second end wall and with said supporting element so as to define an auxiliary liquid-filler chamber of variable volume on the other side of said partition, means defining a flow connection between said main and auxiliary chambers, and means rigidly connecting said first and second end walls together for joint movement relative to said supporting element, at least one of said end walls including a truncated conical surface extending about the central longitudinal axis of the mount, said supporting element also including a truncated conical surface disposed generally across from and facing, but axially displaced relative to, the conical surface of said one end wall such that the two conical surfaces define therebetween a truncated conical space having generally concentric inner and outer truncated conical surfaces inclined in the same sense toward the central longitudinal axis of the mount, and at least one of said rubber-like peripheral walls comprising a similar truncated conical body having inner and outer axially displaced, truncated conical surfaces adheringly connected to the corresponding inner and outer axially displaced, truncated conical surfaces of said one end wall and said supporting element such that the inner and outer adhering surface areas are axially displaced relative to each other.

4,161,305

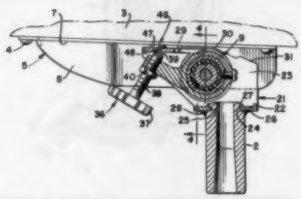
TILT CHAIR CONTROL MECHANISM

Philip J. Williams, Poland, Ohio, assignor to GF Business Equipment, Inc., Youngstown, Ohio

Filed Dec. 29, 1977, Ser. No. 866,166

Int. Cl.[2] A45D *19/04*

U.S. Cl. 248—608 **7 Claims**



1. A control mechanism for a chair having a tiltable seat including, a relatively stationary control body having a pair of vertical spaced-apart side walls, a torsion unit provided with an outer sleeve having end portions journaled within openings in said side walls, said outer sleeve end portions normally angularly stationary relative to said control body side walls during tiltable displacement of said seat, an inner sleeve within said outer sleeve and joined thereto by an intermediate resilient element to provide a relative angular biasing action between said two sleeves, a spider assembly attached to said chair seat including a pair of depending side flanges respectively overlying the ends of said torsion unit inner sleeve, means locking said spider side flanges to said inner sleeve to preclude relative angular displacement therebetween, a tension lever having a collar surrounding said outer sleeve and a forwardly projecting arm constantly biased upwardly toward said seat, means locking said collar to said outer sleeve, a disparate front stop member spanning and fixedly secured to the top forward portion of said control body side walls, said front stop member of case-hardened steel, adjustable tension regulating means carried by the distal portion of said tension lever arm and engageable with the undersurface of said front stop member whereby adjustment of said tension regulating means produces relative frictional motion between said regulating means and said front stop member, said case-hardened steel front stop member including a transverse plate engageable by said tension regulating means and a pair of rearwardly projecting arms each extending from said plate to a point overlying said outer sleeve, said arms spaced apart to define a central notch therebetween, at least a portion of said arms straddling the lateral limits of said tension lever collar, limit means on the upper surface of said front stop member abutting said spider assembly to define the forward tilt limit of said chair seat, and inclined stop ramps on the top of said control body side walls disposed rearwardly of said torsion unit and abutted by said spider assembly when tilted rearwardly.

4,161,306

ELECTRO-MAGNETIC VALVE

Gerhard Brüne, Bamberg, and Manfred Lembke, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1976, Ser. No. 727,690

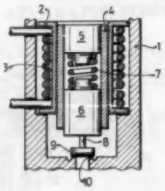
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1975, 2548774

Int. Cl.[2] F16K *31/06*; H01F *5/00, 21/28*

U.S. Cl. 251—129 **2 Claims**

1. An electro-magnetic valve which includes valve means, a valve housing, an iron core disposed along a principal axis within the valve housing, a plunger means coaxially oriented relative to the iron core and separated therefrom by an air gap, said plunger means being movable along the principal axis to open and close the valve means, a stationary magnetic winding means including a magnetic winding and a winding bobbin

disposed concentrically about the principal axis for moving the plunger toward the iron core, means for moving the plunger means away from the iron core, and a temperature compensating resistance connected to the magnetic winding means, the



improvement wherein the magnetic winding is made of brass wire having a specific resistance greater than 20 milli-ohms per square millimeter of cross-section per meter length at a temperature of 20 degrees centigrade.

4,161,307

VALVES FOR VEHICLE HEATING SYSTEMS

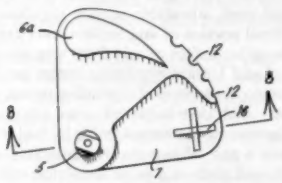
Colin W. F. Clinch, Basingstoke; David N. Harley, Bournemouth, and John P. Palmer, Reading, all of England, assignors to ITW Limited, Basingstoke, England

Filed Aug. 20, 1976, Ser. No. 716,060

Claims priority, application United Kingdom, Aug. 23, 1975, 35112/75

Int. Cl.[2] F16K *5/10*

U.S. Cl. 251—206 **4 Claims**



1. A plastic valve for a motor vehicle heater system, comprising a housing, inlet and outlet ports formed coaxially in said housing, and a substantially planar closure member mounted in said housing for pivotal movement between an open position and a closed position about an axis parallel to said axis of said ports, said closure member being substantially quadrantal and extending in a plane perpendicular to said axis of said ports and having an aperture which communicates between said inlet and said outlet ports when the closure member is in said open position, said closure member having a predetermined substantially rigid thickness through a substantial portion of its area including that portion carrying said axis and forming said aperture and a thinner more flexible portion which covers said outlet port when the closure member is in said closed position, said flexible portion of said closure member being stiffened locally in the area of said thin flexible portion which covers said outlet port when said closure member is in the closed position with said flexible portion permitting flexing movement of the closure along the axis of said ports to insure sealing at low pressures between said ports and said closure member further having notches in its periphery, said notches traversing said outlet port as said closure member pivots from said open position to said closed position, with said notches acting as pressure relief means between said open and closed positions.

4,161,308

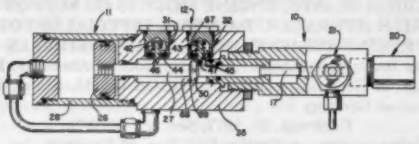
SWITCHING VALVE ASSEMBLY FOR FLUID MOTOR-DRIVEN INJECTOR PUMP

Robert R. Bell, and William H. Alexander, both of Houston, Tex., assignors to Vapor Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 666,920, Mar. 15, 1976, abandoned. This application Jun. 9, 1977, Ser. No. 805,142

Int. Cl.[2] F16K *1/16;* F01L *25/02;* F04B *17/00, 35/00*

U.S. Cl. 251—228 **1 Claim**



1. A dumping valve assembly for a switching valve device comprising a casing, a ring-shaped valve seat of resilient material supported by said casing and having a fluid passageway extending centrally therethrough, said seat having inlet and outlet sides at the opposite ends of the fluid passageway, and a valve closure member resiliently biased against the inlet side of the seat and having an actuating arm extending through the passageway and being tiltable relative the seat for opening the valve assembly, said closure member including a disk-shaped central portion with the actuating arm extending from one side thereof, and a guide arm extending from the other side of said central portion, said arms being axially aligned along an axis extending through the center of the central portion and being conically shaped and identically formed whereby the closure member is symmetrical and weight balanced, whereby engagement and movement of the actuating arm causes the valve closure member to tilt and open the passageway.

4,161,309

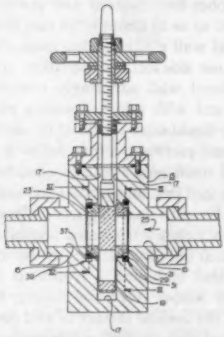
FLUID BY-PASS/SEAL MEANS

Thomas A. Klyce, Memphis, Tenn., assignor to Mohawk Valve Company, Bartlett, Tenn.

Filed Aug. 26, 1977, Ser. No. 828,199

Int. Cl.[2] F16K *3/02*

U.S. Cl. 251—328 **7 Claims**



3. An improved gate valve of the type including a valve housing having a fluid passageway therethrough for allowing fluid to flow through said valve housing and having a gate-receiving chamber positioned substantially transverse to and in communication with said fluid passageway, including a gate member reciprocatingly mounted in said gate-receiving chamber of said valve housing for movement between a position in which fluid is allowed to freely flow through said valve housing and a position in which fluid is prevented from flowing through said valve housing, including an annular-shaped seat

member positioned in said valve housing intermediate said fluid passageway and said gate-receiving chamber on the upstream side of said gate-receiving chamber, said fluid passageway having an enlarged portion for receiving said seat member, and including a seal member positioned between said seat member and said valve housing, wherein the improvement comprises: a pocket means formed in said valve housing adjacent said seal member for allowing said seal member to move thereinto when fluid is flowing into or attempting to flow into said fluid passageway in a forward direction so that the fluid can by-pass said seal member and flow between said seat member and said valve housing, said valve housing having an annular groove therein adjacent said seal member for defining said pocket means.

4,161,310

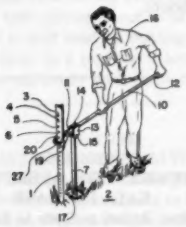
METAL FENCE POST PULLER

Merrill D. Parker, Box 46, Rufus, Oreg. 97050

Filed Jun. 22, 1978, Ser. No. 918,036

Int. Cl.[2] E21B *19/00*

U.S. Cl. 254—30 **1 Claim**



1. A metal fence post puller for pulling a metal fence post from the ground, the fence post having projections extending therefrom, said metal fence post puller comprising

a shaft-like support member having spaced opposite first and second ends;

an elongated bar having spaced opposite first and second ends having a pair of bracket members affixed thereto in the area of the first end thereof in spaced parallel diametrically opposed relation, said bracket members being pivotally affixed to the first end of the support member whereby said bar is rotatable in the plane of said bar and said support member in directions toward and away from said support member when manually gripped at the second end of said bar;

a base plate affixed to the second end of the support member and extending perpendicularly thereto for supporting said support member in upright position adjacent a metal fence post;

a rod-like cross member affixed to said bar at the first end thereof and extending perpendicularly therefrom; and

coupling means for coupling said bar to the fence post, said coupling means comprising a pair of flat bar members each having spaced opposite first and second ends and a bottom edge extending between and joining said ends with a downwardly opening slot formed therein in the area of the first end and extending from the bottom edge at an acute angle therewith and a rod-like connecting member affixed to said flat bar members in the area of the second ends thereof and maintaining said flat bar members in spaced parallel relation whereby when said flat bar members are positioned astraddle the fence post with the connecting member under a projection of said fence post and with the cross member of said elongated bar in said slots, manual force applied downward in the area of the second end of said elongated bar exerts a much greater force upward on said fence post.

4,161,311

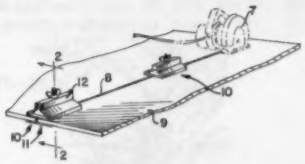
KERF CLAMP

Daniel V. Holman, Chicago, Ill., assignor to Adjustable Clamp Company, Chicago, Ill.

Filed Jun. 1, 1978, Ser. No. 911,462

Int. Cl.[2] B25B *5/14*

U.S. Cl. 269—49 **7 Claims**



1. In a kerf clamp of the type including a clamp base having an upper horizontal work piece engaging surface, a rigid kerf blade projecting perpendicularly upwardly from said base horizontal surface, male fastener means mounted on the upper distal end of said blade, female fastener means adapted for mating engagement with said male fastener means, and a clamp pressure member having a lower horizontal work piece engaging surface and having a slot opening therein adapted for receiving said kerf blade and male fastener means therethrough and an additional opening through the top surface of said clamp pressure member which is aligned with said slot opening for receiving said male fastener means, said kerf blade and said vertical slot providing means to align said clamp base and pressure member with each other and with a kerf; the improvement wherein said clamp base includes a pair of elongate strengthening ribs or deformations extending substantially across said base in a direction transverse to the plane of said kerf blade for providing added structural rigidity to said base, and said pressure member is a generally tubular structure including a relatively large flat bottom wall defining said lower work piece engaging surface, and a narrow upper gripping portion, said structure having opposed sloping shoulder walls between said upper gripping portion and said flat base for providing added strength in compression to said pressure member.

4,161,312

CARD FEEDING MECHANISM

Friedhelm Eckhardt, Eiserfeld-Niederschelden; Wolfgang Raffenberg, Kirchen-Wehbach, and Axel Klein, Eiserfeld-Eisern, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1977, Ser. No. 858,267

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1976, 2655789

Int. Cl.[2] B65H *29/00*

U.S. Cl. 271—3 **8 Claims**

1. A card handling mechanism for feeding cards to and receiving cards in a reverse direction from a processing station, comprising:

a supply magazine for storing cards to be processed;

a guide channel, and first means for feeding a card from the supply magazine to and through the guide channel;

a forked channel portion having first, second and third legs;

an input channel extending from said forked channel portion third leg disposed for receiving a card fed through the first leg;

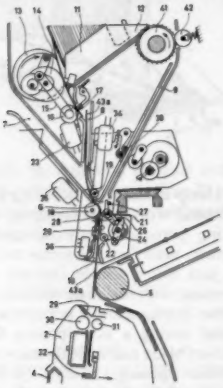
an ejection channel having an input end disposed for receiving a card ejected from the input channel through the forked channel out the second leg;

second means for feeding a card in the input channel in a feed direction for processing, and for ejecting a card in the input channel in a direction opposite said feed direction; and

a buffer channel arranged to permit manual insertion of a card through the buffer channel, into said first leg, for feeding into the input channel;

wherein said guide channel opens into the buffer channel in front of said first leg;

said mechanism includes a deflector, and means for mounting and moving said deflector at least between a first position in which a card being ejected from said input channel follows an undeflected path from said third leg to



said second leg, and a second position in which the card being ejected from said input channel is deflected so as to follow a path out said first leg; and

said channels and forked channel portion are so arranged that a card being fed through said guide channel and said first leg while another card is being ejected along said undeflected path will contact said another card at an acute angle and be guided along said another card and through said input channel for processing.

4,161,313

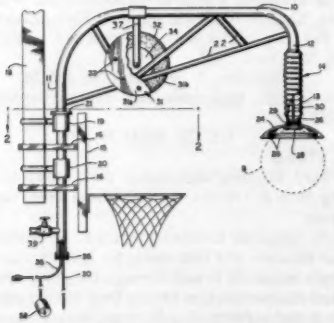
PRACTICE DEVICE FOR BASKETBALL

Russell F. Dickey, 3618 Lakeshore Dr., Smyrna, Ga. 30080

Filed Dec. 12, 1977, Ser. No. 859,399

Int. Cl.[2] A63B *69/00*

U.S. Cl. 273—1.5 A **4 Claims**



4. A basketball practice device, wherein at least one player can practice techniques for handling a basketball relatively to a backboard and a goal, said practice device comprising holding means for releasably holding said basketball adjacent to said backboard and said goal, said holding means being so constructed and arranged that said basketball is removable from said holding means by a player through the use of a predetermined amount of force, support means for supporting said holding means, said support means being movable with respect to said backboard, said support means including extendible means carrying said holding means, said extendible means providing for selected movement of said holding means in a vertical plane, said holding means including a cap, and attaching means for releasably attaching said basketball to said cap, said attaching means including means for evacuating said cap, and sealing means for sealing between said basketball and said cap when said basketball has said cap received thereon, said means for evacuating said cap including a source of vacuum in communication with said cap, and means for varying said source of vacuum, said support means comprising a boom pivotally mounted above said backboard, said extendible means being carried by one end of said boom and placed in the vicinity of said goal, said extendible means including a tubular member fixed to said cap, said boom having an opening therethrough in communication with the opening in said tubular member, a vacuum pump carried by said boom, the low pressure side of said vacuum pump being connected to said opening through said boom, a motor connected to said vacuum pump for driving said vacuum pump, and a housing surrounding said vacuum pump and said motor, and a cable connected to said cap and extending through said tubular member and said opening through said boom.

4,161,314

AMUSEMENT DEVICE WITH APERTURES AND TIMED BALL RELEASE

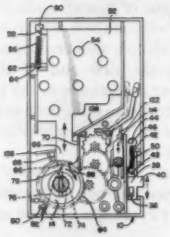
Takashi Kaga, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Japan

Filed Nov. 2, 1976, Ser. No. 738,329

Claims priority, application Japan, May 26, 1976, 51/67981[U]

Int. Cl.[2] A63D *13/00;* **A63B** *71/04*

U.S. Cl. 273—121 R **3 Claims**



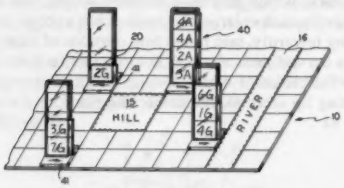
1. An amusement device, comprising a housing provided with a playing surface having first openings and a path leading toward said openings, a plate below said playing surface provided with second openings and mounted to move between first and second positions wherein said first and second openings are aligned and non-aligned, respectively, means biasing said plate toward said second position, a plurality of playing pieces each capable of passing through said openings, means for propelling said playing pieces along said path toward said first openings, and means automatically moving said plate to said first position after an interval of time, wherein said means automatically moving said plate comprises a knob mounted to said housing for rotation, said knob being provided with abutment means, and spring means for rotating said knob in one direction after said knob has been rotated manually in the opposite direction until said abutment means engages said plate urging said plate to its said first position.

4,161,315

STACKER FOR GAME COUNTERS

Jimmy W. Walton, 201 North St., Cascade, Wis. 53011

Filed Nov. 14, 1977, Ser. No. 850,960
Int. Cl.[2] A63F 3/00, 9/00
U.S. Cl. 273—262 7 Claims



3. In combination:

a game board divided into a plurality of playing spaces;

playing pieces comprising thin, generally square pieces of material; and

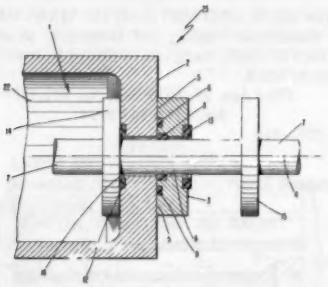
stackers for holding and displaying a plurality of said pieces comprising a flat base having a size selected to fit within a single one of said playing spaces and means perpendicularly mounted to said base for holding and displaying said plurality of pieces in a position whereby said pieces are oriented perpendicularly with respect to said base.

4,161,316

GASTIGHT PENETRATION

Helmut Nowack, Fislisbach, and Adelbert Rappange, Kleindöttingen, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Sep. 14, 1977, Ser. No. 833,361
Claims priority, application Switzerland, Aug. 18, 1977, 10142/77
Int. Cl.[2] F16J 15/06
U.S. Cl. 277—9 6 Claims



1. In a gastight penetration through a wall of a gas-filled enclosure of the type having an opening in said wall and an actuating rod extending through said opening and movable in an axial direction, the improvement comprising:

(a) a pair of flanges secured on said actuating rod on opposite sides of said wall and spaced apart a distance greater than the thickness of said wall,

(b) flange seal means secured on the interior and exterior of said wall in position to be engaged by said flanges upon axial movement thereof relative to said wall,

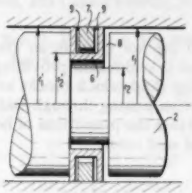
(c) rod seal means in said wall for preventing leakage of gas through said opening around said rod, said rod seal means being positioned between said flange seal means, and said wall including a removable plate on the exterior side for retaining said rod seal means, whereby said rod seal means and said exterior flange seal means may be replaced without leakage of gas through said opening.

4,161,317

SEAL RING FOR ROTARY SHAFT

Hiroshi Sakamaki, Utsunomiya, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 524,187, Nov. 15, 1974, abandoned. This application Jan. 23, 1976, Ser. No. 651,870
Claims priority, application Japan, Nov. 17, 1973, 48-132260[U]
Int. Cl.[2] F16J 9/00
U.S. Cl. 277—25 2 Claims



1. A composite seal ring structure in combination with a cylindrical ring carrier having a first peripheral slot therein, a cylindrical chamber containing liquid, said carrier being positioned within the chamber so that the liquid is on only one side of the ring structure, a shaft fixed to the ring carrier for rotating said carrier and ring structure, the outside diameter of said carrier being smaller than the inside diameter of said chamber, said ring structure preventing the liquid from leaking past said ring structure to the other side of said ring structure, said composite seal ring structure comprising:

a first radially expandable split seal ring having a gap and disposed in said first slot so that the outer periphery of said first ring engages the inner peripheral surface of said chamber, the axial width of said first ring being less than that of said first slot to form in said slot a first clearance space which is open to said one side of said chamber so that said space is filled with said liquid; and

a second radially expandable split seal ring having a gap and disposed within a second peripheral slot formed in said first ring and having an axial width less than that of said second slot to form second and third clearance spaces between the adjacent sides of said second ring and said second slot for containing liquid in said spaces, the outer periphery of said second ring also engaging the inner peripheral surface of said chamber;

the gaps in said first and second split rings being radially misaligned;

whereby, upon rotation of said shaft, the first and second rings, and the liquid in said first, second and third clearance spaces, also rotate so that the liquid packing effect produced by centrifugal force prevents the liquid from leaking past said composite seal ring structure.

4,161,318

SEALING SYSTEM FOR ROTORS

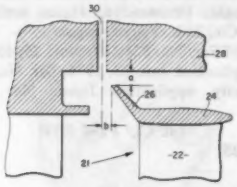
Alan R. Stuart, Sketchley Manor, and Brian S. Stratford, Littleover, both of England, assignors to Rolls-Royce Limited, London, England

Filed Mar. 14, 1978, Ser. No. 886,605
Claims priority, application United Kingdom, Mar. 26, 1977, 12841/77
Int. Cl.[2] F01D 11/04; F16J 15/40
U.S. Cl. 277—53 5 Claims

1. A sealing system for a turbine of a gas turbine engine comprising:

a rotor arranged to be supplied with hot gases, a turbine casing defined by a stationary member surrounding said

rotor, an annulus mounted on the periphery of said rotor, an annular clearance between said annulus and said stationary member, and means in said stationary member positioned just upstream of said annular clearance for injecting a high pressure cooling fluid transversely across



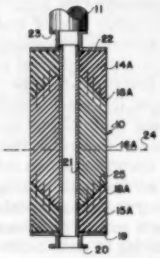
a flow path of the hot gases in an area upstream of the annular clearance, said means providing a curtain of high pressure cooling fluid which blocks at least a portion of the hot gases from passing through said annular clearance to thereby increase the proportion of hot gases used to do useful work on said rotor.

4,161,319

EXPANSION PACKER

Arnold G. Stocking, 1132 Marcombe Crescent NE., Calgary, Alberta, Canada

Filed Jul. 10, 1978, Ser. No. 923,179
Claims priority, application Canada, Jul. 14, 1977, 282701
Int. Cl.[2] F16J *15/10*; E21B *33/128*
U.S. Cl. 277—116.6 **4 Claims**



1. An expansion packer for oil well drillings comprising in combination a mandrel having upper and lower connections and a central axially extending tubular portion therebetween, a resilient packing element surrounding said tubular portion and extending between said upper and lower connections, said packing element including upper and lower tubular sections and a center section, all formed from a resilient elastomeric material, bonded junctions between each of said upper and lower sections and the respective ends of said center section, the durometer reading of said upper and lower sections being greater than the durometer reading of said center section, said junctions inclining at an angle and extending outwardly from said tubular portion of said mandrel and towards the transverse axis of said center section thereby forming a substantial conical junction.

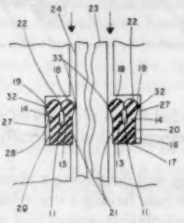
4,161,320

RESILIENT PACKING

Charles G. Stucke, Clarence, N.Y., assignor to Chemprene, Inc., Alden, N.Y.

Continuation of Ser. No. 357,966, May 7, 1973, abandoned. This application Jun. 24, 1977, Ser. No. 809,869
Int. Cl.[2] F16J *15/32*
U.S. Cl. 277—205 **5 Claims**

1. A resilient packing having a unitary body of a generally ring configuration about an axis, said body including a cavity of a generally U-shaped cross-sectional contour extending annularly on and inwardly from an outer surface of the packing and defined by upwardly and outwardly extending leg portions which each terminate in enlarged lip sections which mate upon radial compression of the packing to preserve the generally U-shaped cross-sectional contour of the cavity and to create an outwardly, expansive force on the lip sections by virtue of such compression which insures a positive sealing force for such ring wherein each enlarged lip section has a projecting portion extending inwardly, said projecting portions of each lip section having a curved surface which in cross-section forms the arc of a circle the radius of which is such that upon compression of the mating lip sections, the projecting portions are each com-

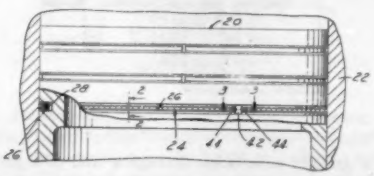


pressed inwardly, a distance equal to from about 8 to about 30 percent of such radius, said lip sections including a convex portion extending outwardly and forming the contact sealing surfaces for the packing, said convex portion in cross-section being conical and terminating in an apex which forms a circumferential ridge constituting the sealing contact surface for the lip section, said apex being generally radially in line with said inwardly extending projecting portion of each enlarged lip section, whereby said circumferential ridge is in direct compression loading with the curved surfaces of said lip sections, said direct compression loading including compression along a generally radial straight line between an approximate midpoint of said curved surface and said circumferential ridge.

4,161,321

PISTON RING AND METHOD OF MANUFACTURE

John L. Hendrixon, Shelby, and Robert R. Rositch, Spring Lake, both of Mich., assignors to Sealed Power Corporation, Muskegon, Mich.

Filed Jan. 25, 1978, Ser. No. 872,157
Int. Cl.[2] F16J *9/14*
U.S. Cl. 277—216 **6 Claims**

1. For use in a piston oil ring assembly in a reciprocating piston engine, a parted annular sealing ring of generally uniform material composition adapted to be disposed in a piston ring groove and including a radially inwardly directed ring surface of substantially constant diameter adapted to be engaged by an expander-spring disposed in said groove for expanding said ring into sealing engagement with a cylinder wall, said sealing ring comprising first ring portions at respective ring tips and a second ring portion of the same said material composition as said first portion extending between said first ring portions integrally therewith, segments of said ring surface integral with said first portions being substantially hardened as compared with said ring surface in said second portion

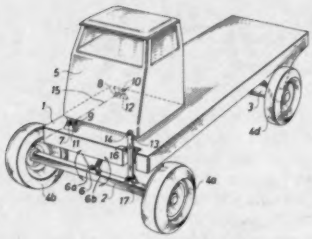
to prevent wear and embedment of an expander-spring into said first portions.

4,161,322

VEHICLES HAVING REDUCED TILTING OF THE SUPERSTRUCTURE THEREOF RELATIVE TO THE WHEEL AXLE SUPPORT THEREFOR

Bo-Gunnar Ekeborg, and Stig-Gunnar Lofgren, both of Jarved, Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Oct. 17, 1977, Ser. No. 844,091
Claims priority, application Sweden, Oct. 22, 1976, 7611772
Int. Cl.[2] B62D *37/00*
U.S. Cl. 280—6 R **12 Claims**



1. A vehicle having a superstructure characterized by a low sideways tilt relative to a tilting axle, comprising, in combination, a chassis; at least first and second wheel axles supporting the chassis, at least one of which is pivotably mounted on the chassis so as to be tiltable sideways about the pivot mounting in a plane substantially parallel to the sideways tilting plane of the vehicle; a superstructure pivotably mounted on the chassis for tilting about its pivot mounting in a plane parallel to the axle tilting plane; and means on the other side of the pivot mounting for the tiltable axle, linking the superstructure to the tiltable axle, and pivotably attached to the superstructure on one side of the chassis and to the tiltable axle on the other side of the chassis, the spacing between the pivot mounting of the axle and the pivot attachment of the linking means thereto being less than the spacing between the pivot mounting of the superstructure and the pivot attachment of the linking means thereto, to tilt the superstructure less about its pivot mounting when the tiltable wheel axle is tilted sideways.

4,161,323

SNOW SKI BOARD APPARATUS

Maxwell T. Wetteland, 5225 Empire Dr., North Burnaby, British Columbia, Canada (V5B 1N1)

Filed Oct. 3, 1977, Ser. No. 838,597
Int. Cl.[2] A63C *17/18*; B62B *13/04, 19/02*
U.S. Cl. 280—7.12 **10 Claims**

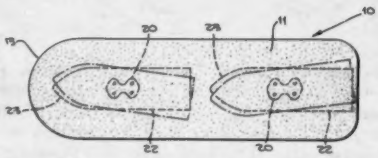
1. Snow ski apparatus comprising a fore ski section having a front end curved upwardly and a back end, said fore ski section being formed with a lower or running surface with a slight central protuberance of substantially shallow V-cross section extending longitudinally near the back end thereof, a rear ski section having a front end curved upwardly and a back end, said rear section being formed with a lower or running surface with a slight central protuberance of substantially shallow V-cross section extending longitudinally near the front end thereof, and being immediately behind and in longitudinal alignment with the fore ski section, the front end of the rear ski section overlapping the back end of the front ski section, a flexible connector connecting the front end of the rear section to the back end of the fore section, first mounting means on the fore section between the ends thereof adapted to clamp said fore section to the front rollers of a roller skate board, and second mounting means on the rear section between its ends adapted to clamping said rear section to the rear rollers of the skate board, said connector allowing limited relative vertical and horizontal movement between the fore ski section and the rear ski section.

4,161,324

SKI BOARD

Christopher R. Colvin, 201 Calle Conchita, San Clemente, Calif. 92672

Filed Jan. 3, 1978, Ser. No. 866,274
Int. Cl.[2] B62M *27/02*
U.S. Cl. 280—21 A **6 Claims**



1. A ski board for use as a sport vehicle to accommodate the feet of a rider comprising a relatively flat wide foot board having an upper face for the feet intermediate opposite ends and a lower face, a pair of respective foward and rearward runners of substantially equal length, said length being less than one-half the length of the board, and a mounting interconnecting each runner to the board at the lower face so that the runners are in force and aft alignment and one runner behind the other, the runners being at locations spaced from each other with the front of the forward runner no further forward than the front end of the board and the rear of the rearward runner no further rearward than the rear end of the board, each mounting comprising a saddle and a yoke, the saddle having a fore and and an aft end, there being a boss with a post thereon adjacent one end and a universal joint (socket) adjacent the other end, the saddle of one of said mountings having an attachment to the lower face of the board with the fore end forward and the saddle and the other mounting having an attachment to the lower face of the board with the fore end rearward, each said yoke comprising a column having a movable end in thrust engagement in said socket and an anchored end is fixed engagement with the respective runner intermediate opposite ends of the runner, said column having a transversely extending steering arm, and a yieldable connection between the steering arm and said post whereby pressure on one side or the other of the board effects a lateral shift of the steering arm and a corresponding change in direction of the runner relative to the board.

4,161,325

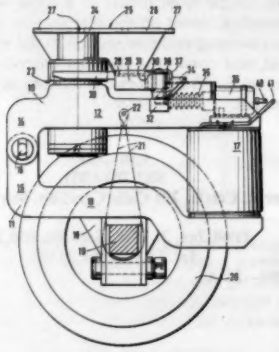
SUPPLEMENTARY SUPPORT FOR VEHICLES

Herbert Schneider, Haimhausen, Fed. Rep. of Germany, assignor to SÜD-Chemie AG, Fed. Rep. of Germany

Filed Dec. 19, 1977, Ser. No. 861,910
Int. Cl.[2] B60G *17/00*; B60B *11/00*
U.S. Cl. 280—81 R **6 Claims**

1. A removable mobile frame for reduction of axle loads of a heavy vehicle comprising first and second horizontal lever arms pivotally interconnected at one end, biasing means interposed between free ends of said lever arms, a supporting member connected to said first lever arm and adapted to be attached to said vehicle, the connection between said supporting member and said first lever arm including a shaft defining a vertical

rotatable pivot axis between said first lever arm and said supporting member, means normally maintaining said supporting member and said first lever arm in a predetermined position and accommodating rotation from said predetermined posi-



tion, said last means including a cam track on said supporting member and a cam on said first lever arm biased into engagement with said cam track with said cam track defining said predetermined position, and at least one axle and one rotor wheel on said axle connected to said second lever arm.

4,161,326

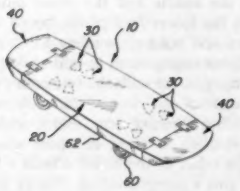
SKATEBOARD

Steven L. Gaber, 12208 Wallingstone La., Austin, Tex. 78759

Filed Feb. 4, 1977, Ser. No. 765,656

Int. Cl.[2] A63C *17/14*

U.S. Cl. 280—87.04 A **5 Claims**



1. In a skateboard having wheels, and an integral board having upper and lower horizontal surfaces extending over said wheels, an improvement to said board comprising: at least one cavity formed in the lower surface of said board oriented over each of said wheels, said cavity extending from said lower horizontal surface of said board to a region below the upper horizontal surface of said board, said cavity being substantially triangular in shape at the intersection of said cavity with said lower horizontal surface, the shape of said cavity corresponding in shape to the surface of a cone segment, said cavity being oriented on said lower surface wherein a line drawn through the apex of said triangular shape on said lower horizontal surface nearest the longitudinal centerline of said board bifurcates said cavity and said line further intersects said longitudinal centerline at an angle between 45° and 75°.

4,161,327

STEERING ASSEMBLY FOR A VEHICLE, ESPECIALLY FOR AN INDUSTRIAL FLOOR VEHICLE, SUCH AS A FORKLIFT TRUCK

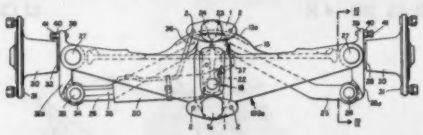
Günter Honecker, Klein-Welzheim, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 26, 1977, Ser. No. 836,849

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2642903

Int. Cl.[2] B60G *1/00*

U.S. Cl. 280—95 R **7 Claims**



1. A wheel assembly for a vehicle, especially a floor vehicle such as a forklift truck, which comprises:

an elongated axle housing;

a respective axle carrier pivotally mounted at each end of said housing for steering displacement of a wheel carried on the respective carrier;

a pivot pin mounted in said housing centrally of said ends;

a steering knuckle swingably mounted on said pin; and

a pair of flat, coplanar tie bars individually pivoted to said knuckle and respectively articulated to said carriers, said tie bars being angularly bent in their common plane and having a substantially rectangular cross section progressively narrowing from their bends in the direction of said knuckle.

4,161,328

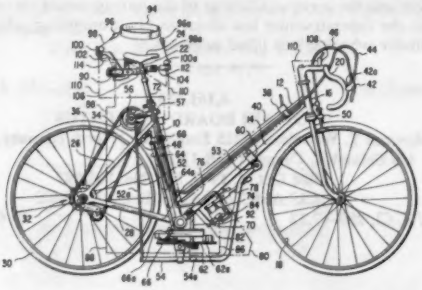
BICYCLE

Boris Efros, 920 N. Stanley Ave., Los Angeles, Calif. 90046

Filed Mar. 4, 1977, Ser. No. 774,620

Int. Cl.[2] B62J *1/00*

U.S. Cl. 280—290 **15 Claims**



1. A restraint mechanism for a bicycle rider comprising:

(a) means for engaging the body of the rider;

(b) first and second coupling means for selectively joining said body engaging means to preselected portions of said bicycle;

(c) a first engagng means having spring means for selectively retaining said first coupling means in a first preselected position;

(d) a second engaging means having spring means for selectively retaining said second coupling means in a first preselected position;

said first and second engaging means each including means

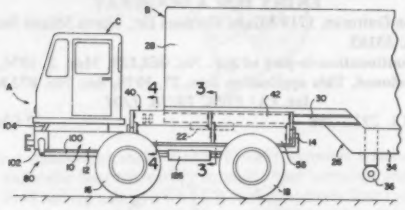
for releasing the associated spring means from the associated coupling means thereby permitting adjustment of said body engaging means, said releasing means configured such that upon actuation, the associated coupling means is movable into a second preselected position, and upon deactuation, the associated coupling means is retained in said second position.

4,161,329

TRACTOR TO TRAILER CONNECT SYSTEM

Gilbert B. Pilz, Milford, Mich., and George H. Young, Ottawa, Kans., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Feb. 6, 1978, Ser. No. 875,570
Int. Cl.² B60D *7/02*
U.S. Cl. 280—474 **17 Claims**



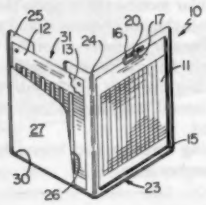
1. A wheel supported draft vehicle comprising a chassis frame including a motive power carrying front portion and a load carrying rear portion, said chassis frame having front and rear pairs of wheels mounted thereon, and selectively operable connecting means on the said rear portion of said chassis frame for making articulated and non-articulated draft connections with a vehicular trailer, said selectively operable connecting means including coupling means on said rear portion of said chassis frame interengagable with kingpin means on a vehicular trailer to provide an articulated connection between said trailer and draft vehicle, and said selectively operable connecting means further including plate means mounted on said rear portion of said chassis frame for movement between a first position engaging laterally opposite sides of said trailer and a second position out of engagement with said trailer, said plate means in said first position interengaging said draft vehicle and trailer against relative pivotal movement.

4,161,330

INVENTORY COMPARISON SYSTEM

Donald E. Ross, Centerville, Ohio, assignor to Dayco Corporation, Dayton, Ohio

Filed Oct. 10, 1978, Ser. No. 949,609
Int. Cl.² B42D *15/00*
U.S. Cl. 283—55 **20 Claims**



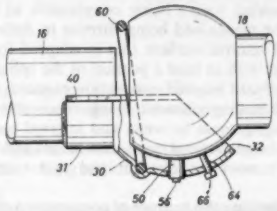
1. In an apparatus for comparing an inventory of a competitor's products with a supplier's suggested inventory, the improvement comprising, a competitor's part numbers sheet having a first arrangement of said competitor's part numbers thereon with a vacancy on said sheet adjacent each part number for marking the available quantity of each part number to define said inventory of competitor's products, a supplier's part numbers sheet having a second arrangement of said supplier's part numbers thereon which is identical to said first arrangement, opening means in said supplier's sheet adjacent the part numbers thereon, first sheet aligning means comprising said competitor's sheet and second sheet aligning means comprising said supplier's sheet, and means supporting and aligning said competitor's sheet and said supplier's sheet in aligned relation employing said first and second sheet aligning means so that said supplier's sheet blocks from view said first arrangement of part numbers and each quantity of a competitor's part number is viewable through said opening means opposite a corresponding supplier's part number, each supplier's part number and its viewable quantity comprising said supplier's suggested inventory for said inventory of said competitor's products.

4,161,331

SPHERICAL IRRIGATION PIPE COUPLING WITH REPLACEABLE SEAL

James E. Hansen, Spokane, Wash., assignor to Gifford-Hill & Company, Inc., Spokane, Wash.

Filed May 23, 1977, Ser. No. 799,140
Int. Cl.² B05B *15/00*; F16L *27/02, 27/06, 55/00*
U.S. Cl. 285—5 **14 Claims**



6. A universally movable coupling for irrigation pipes having a replaceable sealing element, said coupling comprising:

a first pipe section;

an internal connection element extending from said first pipe section and having a flow passage defined therein for allowing fluid flow therethrough, said internal connection element defining a generally spherical external surface;

a pivot pin extending from the lower portion of said internal connection element;

a second pipe section;

external connector means extending from said second pipe section and defining a generally spherical internal surface that is adapted for mating engagement with at least a portion of the generally spherical external surface of said internal connection element and defining a concave supporting receptacle for supporting said internal connection element and one extremity of said first pipe section, said concave supporting receptacle defining a pivot aperture releasably receiving said pivot pin to retain said coupling against longitudinal separation;

external locking means being connectable to said external connector means and being formed to define a partially spherical internal surface that is adapted for mating engagement with at least a portion of the spherical external surface of said internal connection element;

said external connector means and said external locking means each being formed to define internal seal groove segments that are disposed in registry upon assembly of said external locking means to said external connector means to define an annular seal groove;

an annular sealing element being receivable with said annular seal groove and establishing a movable seal between said internal connection element amd said external connector and said external locking means; and

separation means being provided on one of said internal connection element and said external connection means,

said separation means being movable to accomplish sufficient separation of said internal connection element and external connection means to facilitate removal and replacement of said sealing element.

14. A universally movable coupling for irrigation pipes having a replaceable sealing element, said coupling comprising:

a first pipe section;

an internal connection element extending from said first pipe section and having a flow passage defined therein for allowing fluid flow therethrough said internal connection element defining a generally spherical external surface and having a pivot pin depending therefrom;

a second pipe section;

external connector means defining a generally semicylindrical portion that is weldable to said second pipe section said external connector means defines a generally spherical internal surface that is adapted for mating engagement with at least a portion of the spherical external surface of said internal connection element and defines a concave supporting receptacle for supporting said internal connection element and one extremity of said first pipe section, said concave supporting receptacle defining an aperture for receiving said pivot pin and establishing a mechanical connection between said internal connection element and external connector means;

external locking means being connectable to said external connector means and being formed to define a partially spherical internal surface that is adapted for mating engagement with at least a portion of the spherical external surface of said internal connection element;

an annular sealing element being receivable in movable sealed engagement between said internal connection element and said external connector means and between said internal connection element and said external locking means;

means for limiting the amount of compression of said annular sealing element;

a drain passage being defined in said pivot pin means and communicating said flow passage of said coupling with the atmosphere when said drain passage is open; and

closure means is provided for said drain passage and may be selectively opened and closed as desired for draining fluid from said pipe sections and coupling.

4,161,332

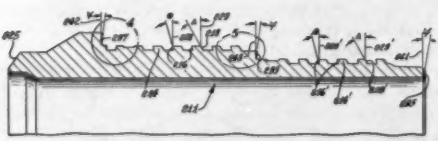
DOVETAIL CONNECTION FOR PIN AND BOX JOINTS

Thomas L. Blose, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Continuation of Ser. No. 679,476, Apr. 22, 1976, abandoned. This application Jun. 9, 1978, Ser. No. 914,162

Int. Cl.[2] F16L *25/00*

U.S. Cl. 285—334 **15 Claims**



1. In a pipe joint including pin and box members defining an axis,

(a) first and second pairs of interengaged threads on the respective members, the first pair of threads axially spaced from the second pair of threads, and

(b) a first pair of general frusto-conical shoulders on the members located axially between said first and second pairs of threads, said shoulders having semi-dovetail interfit on make-up of the joint,

(c) said threads of said first and second pairs having semi-dovetail interengaged flanks which are negatively angled in axial radial planes, and relative to planes normal to said axis, said flanks on the pin member facing away from the end of the pin member, and said frusto-conical shoulders being positively angled in axial radial planes, and relative to planes normal to said axis,

(d) said joint including a second pair of annular shoulders on the respective members which extend in substantially parallel, face-to-face, proximate but spaced relation on normal make-up of the joint, said second pair of shoulders having semi-dovetail interfit in the event of sufficient coining of the shoulders of the first pair on joint make-up, said interfit being positively angled in axial radial planes and relative to planes normal to said axis.

4,161,333

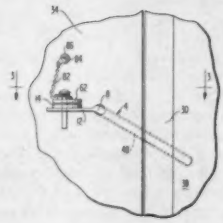
PROTECTIVE MEANS AGAINST UNAUTHORIZED ENTRY FOR A DOORWAY

Milton Guttman, 1719 Miami Gardens Dr., North Miami Beach, Fla. 33162

Continuation-in-part of Ser. No. 663,129, Mar. 2, 1976, abandoned. This application Jan. 27, 1978, Ser. No. 872,829

Int. Cl.[2] E05C *19/18, 1/04*

U.S. Cl. 292—288 **2 Claims**



1. Protective means against unauthorized entry for a doorway which comprises:

a sliding bolt having a major longitudinal body portion and a minor angled leg portion,

a doorway defined in part by a jamb backed by a stud,

a door having inner and outer faces hinged at one side closing said doorway,

a hole drilled in said door, jamb and stud at an angle downard, said hole being at least as long as said bolt body portion and slighty larger in diameter than the diameter of said bolt, said bolt being inserted in said hole,

a first annular member fastened to said inner face of said door normal thereto and adjacent said hole in the door, said annular member comprising a central hole large enough to receive the body portion of said bolt and a smaller lateral hole,

a second annular member fixed upon said angled leg portion having a hole therein corresponding to said lateral hole of said first annular member whereby said second annular member may be juxtaposed parallel to said first annular member when said bolt is fully inserted in said door hole with said lateral hole and second annular member hole aligned, and

a pin extending through said lateral hole and said second annular member hole.

4,161,334

PROTECTIVE APPENDAGE FOR A STEERING COLUMN

Richard A. Sukup, 7456 Meadowcrest, Fort Worth, Tex. 76112

Filed May 4, 1978, Ser. No. 902,973

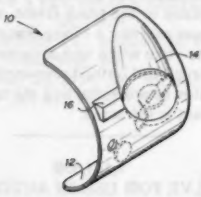
Int. Cl.[2] B62D *25/08*

U.S. Cl. 296—1 R **8 Claims**

1. A protective appendage for the steering column of an

automobile, with the column having thereon a lock assembly for the ignition key, comprising:

(a) a base member comprising a sheet of material which is formed in the arc of a circle so as to be categorized as cylindrical, and the radius of said formed member being approximately 2 inches, such that the base member may surround a portion of the steering column adjacent the lock assembly, and the included angle of the cylindrical portion being within the range of about 110°–180°, and the length of said base member (as measured in a direction parallel to the longitudinal axis of the steering column) being about 3 inches; and



(b) a cylindrical shell of semi-flexible material attached to and extending outwardly from the base member, and said shell having a length which is sufficient to enclose the lock assembly and having a diameter which is less than the length between the two extreme portions of the protruding arms of the lock assembly, and the cylindrical shell being sufficiently flexible so that it may be temporarily squeezed to an elongated cross section which is long enough to pass over said two arms, and said shell being sufficient resilient so as to return to its original cylindrical shape after passing over the arms, whereby said shell may be held in place by the lock assembly arms after the shell has been passed over said arms.

4,161,335

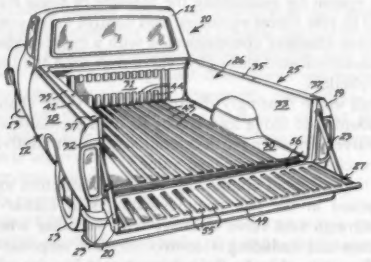
TRUCK BED LINER

Edwin L. Nix, 733 Tahlena Ave., and Bobby E. Davenport, 317 Beckley Dr., both of Madison, Tenn. 37115

Continuation of Ser. No. 769,580, Feb. 17, 1977, Pat. No. 4,111,481. This application Jul. 31, 1978, Ser. No. 929,739

Int. Cl.[2] B62D *33/02*

U.S. Cl. 296—39 R **6 Claims**



1. A protective liner for a truck bed having a bottom wall, a front wall, and opposed side walls, said side walls having longitudinally extending top ledges, comprising:

(a) a bottom liner wall and opposed side liner walls adapted to fit against the interior surfaces of the corresponding bottom wall and opposed side walls in the truck bed,

(b) each of said side liner walls having upper edge portions terminating in laterally outboard extending top flanges adapted to cover the corresponding ledges of the side walls of the truck bed,

(c) at least one opening extending through each of the top ledges,

(d) the width of each ridge member being greater than the width of the corresponding longitudinally aligned rib member to provide longitudinal ventilating spaces between said ridge member and the bottom wall of said truck bed.

4,161,336

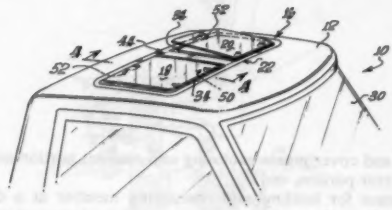
DUAL-OPENING SUN ROOF

Eugene B. LeVan, Whittier, and John Lehne, Hacienda Heights, both of Calif., assignors to LeVan Specialty Co. Inc., City of Industry, Calif.

Filed Jan. 23, 1978, Ser. No. 871,383

Int. Cl.[2] B60J *9/08*

U.S. Cl. 296—137 B **10 Claims**



1. A dual-opening, sun roof mounting in an aperture formed in an automobile roof wherein the improvement of said sun roof comprises:

a main, peripheral frame structure having a substantially rectangular configuration including front, rear and side portions;

a central strut member secured between said front and rear portions of said frame structure;

a compartment defined by said central strut member;

a pair of framed openings defined by said main frame and said central strut member;

a sealing means supported within the perimeter of each framed opening;

a pair of panel members hingedly mounted in respective openings;

means for latching said panels along said rear portion of said frame structure; and

means for releasably hinging said panels along said front portion of said frame structure, whereby each of said panels is individually operated.

4,161,337

PORTABLE FOLDING ORTHOPEDIC CHAIR

Albert Ross, Palm Springs; Richard H. Garrett, Berkeley; Hayden S. Gordon, Orinda, and Evan R. Flavell, Albany, all of Calif., assignors to Albert Ross, Palm Springs, Calif.

Filed Dec. 15, 1977, Ser. No. 860,985

Int. Cl.[2] A47C *7/40*

U.S. Cl. 297—230 **5 Claims**

1. A portable folding orthopedic seat unit for use on a chair, automobile seat, and the like, including in combination:

a seat member,

a back member,

a hinge connecting said back and seat members together so that they can be collapsed together to a generally flat position and opened to a seating position,

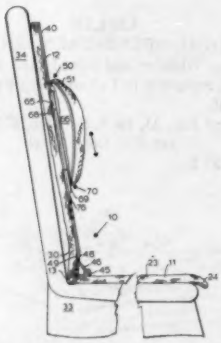
said back member including vertical rigid support means extending from the bottom to the top of the back member,

a carrying handle attached to said rigid support menns near said hinge, and

a movable back-support assembly supported slidably on said support means and comprising:

two separate, padded, generally elliptically-shaped, back-

support members, spaced apart from each other, a substantially vertically rigid and horizontal flexing connecting member joining them together, each said back-support member comprising a rigid rear portion attached to said connecting member and extending in a plane tilted outwardly at an angle to the plane of said back member, a forward resilient portion supported on said rear portion,



and cover means enclosing said resilient portion and said rear portion, and

means for holding said connecting member at a desired adjustable vertical position on said rigid support means,

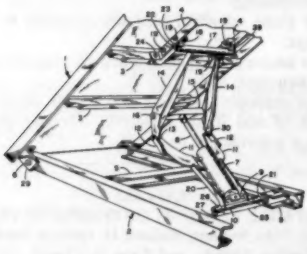
whereby the back of the person sitting in said portable seat unit is supported solely by said two separate back-support members.

4,161,338

PICKUP TRUCK HOIST ATTACHMENT

Henry C. Brown, Dallas, Tex., assignor to The Uni Corporation, Dallas, Tex.

Filed Nov. 3, 1977, Ser. No. 848,110
Int. Cl.[2] B60P *1/16*
U.S. Cl. 298—22 J **5 Claims**



1. A scissor hoist attachment for converting a fixed bed truck with a passenger cab and hauling bed supported on a frame to a tilting bed truck where the truck bed may be rotated from a horizontal to a tilt position, such attachment permitting the truck cab and bed, when the bed is in the horizontal position, to assume the same relative relationship as before the conversion, comprising:

at least two hinges fixedly attached between the underside of the hauling bed and the rear of the truck frame to permit relative rotation between the hauling bed and frame,

a generally tapered bottom frame including a pair of elongate longitudinally extending side plates tapered toward each other at one end and means connected to the side plates at such end for pivotally connecting the side plates to the truck frame and a generally U-shaped element connected between each longitudinally extending side plate at their other end where they are tapered away from each other, said U-shaped element being wider at the bottom of the U and narrower towards the ends of the prongs,

a generally tapered top frame including a pair of elongate longitudinally extending side plates tapered toward each other at one end and means connected to the side plates at such end for pivotally connecting the side plates to the truck hauling bed and means for pivotally connecting the top frame side plates at their other ends where they are tapered away from each other to the ends of the prongs of the U-shaped element of the bottom frame,

a yoke pivotally connected between the top frame side plates,

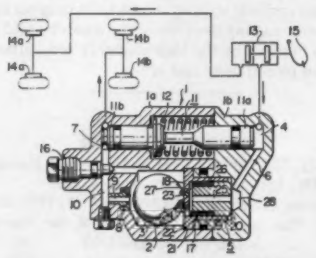
a variable length actuator means interconnected between the yoke and the means for pivotally connecting the bottom frame side plates to the truck frame, said variable length actuator means exerting a lifting force between the truck frame and the yoke when said actuator means is extended so that said truck bed is tilted rearwardly and said variable length actuator means retracting the truck bed when said actuator means is retracted.

4,161,339

CONTROL VALVE FOR USE IN AUTOMOTIVE BRAKE SYSTEM FOR CONTROLLING BRAKE FLUID PRESSURE

Hiroshi Kawaguchi, Mishima, and Yoshihisa Nomura, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 27, 1977, Ser. No. 819,345
Claims priority, application Japan, Feb. 4, 1977, 52-12326[U]
Int. Cl.[2] B60T *8/14*
U.S. Cl. 303—24 F **7 Claims**



1. In a control valve for use in an automotive hydraulic brake system for controlling the pressure of brake fluid transmitted to rear wheel cylinders, said control valve comprising:

a valve chamber communicated with a master cylinder and communicated through a valve port with the rear wheel cylinders,

a ball valve floatingly disposed in said valve chamber and adapted to move forward by its own inertia to close said valve port when the deceleration of an automotive vehicle reaches a predetermined value,

an improvement comprising variable restriction means disposed in the line communicating said master cylinder through said valve chamber with said rear wheel cylinders and including a control member responsive to the flow rate of brake fluid through said line for controlling said flow rate and adapted to move from a first position at which the restriction of said flow rate is minimum toward a second position at which the restriction of said flow rate is maximum when said flow rate exceeds a predetermined value and a spring for urging said control member toward said first position;

said variable restriction means comprising at least two passages which are arranged in parallel relation with each other so as to divide the flow of brake fluid through said line into at least two flows, and a valve member respon-

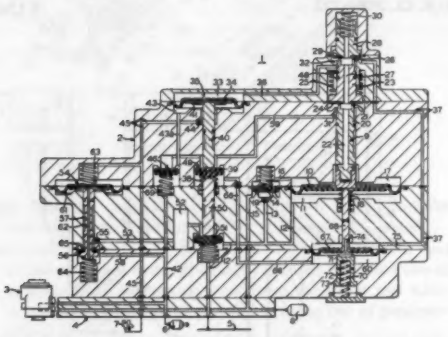
sive to the predetermined flow rate of brake fluid through said line for closing at least one of said parallel passages.

4,161,340

POPPET VALVE TYPE BRAKE CONTROL VALVE DEVICE

James E. Hart, Trafford, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed May 22, 1978, Ser. No. 908,484
Int. Cl.[2] B60T *15/22*
U.S. Cl. 303—33 **12 Claims**



10. For use in a railway car brake system having a brake pipe, a reservoir normally charged to the pressure carried in the brake pipe and a brake cylinder device, there is provided a brake control valve device comprising:

(a) a brake cylinder delivery passage to which said brake cylinder device is connected;

(b) a first exhaust passage via which said brake cylinder delivery passage is connected to atmosphere;

(c) a supply passage via which said brake cylinder delivery passage is connected to said reservoir;

(d) an exhaust control piston valve device in said first exhaust passage operative in a first position thereof to establish fluid pressure communication between said brake cylinder delivery passage and atmosphere and having a control chamber associated therewith, pressurization of said control chamber effecting operation of said piston valve device to a second position in which said communication is interrupted; and

(e) a service valve assembly operatively disposed in said supply passage comprising:

(i) a movable piston abutment subject opposingly to the pressure carried in said brake pipe and in said reservoir; and

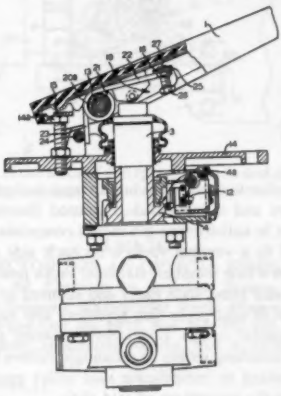
(ii) valve means engageable with said piston abutment for movement therewith to a brake release position in response to a predominance of brake pipe fluid pressure relative to said reservoir fluid pressure and movable from said brake release position to a brake application position in response to a reduction of said brake pipe fluid pressure relative to said reservoir fluid pressure for establishing fluid pressure communication between said reservoir and said brake cylinder device and between said reservoir and said control chamber.

4,161,341

ACTUATING DEVICE FOR PRESSURE MEDIUM BRAKE SYSTEMS

Erich Reinecke, Beinhorn; Helmut Ulrich, Springe; Arnold Haas, Sehnde, and Willi Kolmitz, Coppenbrugge, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse GmbH, Hannover, Fed. Rep. of Germany

Filed Sep. 16, 1977, Ser. No. 833,800
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1976, 2642041
Int. Cl.[2] B60T *15/06*
U.S. Cl. 303—52 **4 Claims**



1. An actuating device for controlling the operation of vehicle brake systems, comprising:

(a) a support;

(b) an actuating lever pivotally attached to said support;

(c) a push rod disposed on said support for axial movement relative thereto;

(d) means on said actuating lever engageable with said push rod to axially move said push rod in a first direction by an amount dependent upon the amount of pivotal movement of said actuating lever in said first direction;

(e) means axially biasing said push rod in a second direction opposite said first direction;

(f) an auxiliary actuating lever pivotally attached to said support and underlying said actuating lever so that pivotal movement of said actuating lever in said one direction effects engagement of said actuating lever with said auxiliary actuating lever;

(g) means biasing said auxiliary actuating lever around said pivot in said second direction;

(h) first stop means on said support engageable by said auxiliary actuating lever to limit pivotal movement of said auxiliary actuating lever in said second direction;

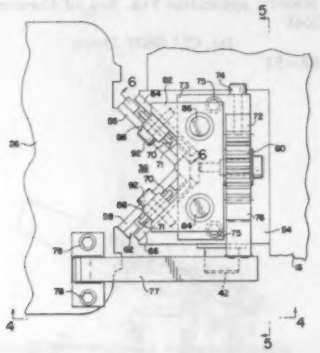
(i) second stop means on said support engageable by said actuating lever to limit pivotal movement of said actuating lever in said second direction and so disposed as to provide a predetermined distance for movement of said actuating lever away from said second stop means in said first direction before engagement with said auxiliary actuating lever, and means on said push rod for actuating braking mechanism in accordance with the axial position of said push rod.

4,161,342

ANTI-FRICTION GIBS FOR PRESSES

Roger J. Nelsen, Hastings, Mich., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Dec. 5, 1977, Ser. No. 857,121
Int. Cl.[2] F16C *29/04*
U.S. Cl. 308—6 R **11 Claims**



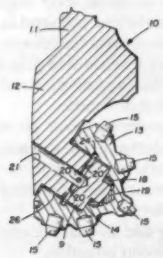
1. In a mechanical press having a frame including a pair of side members and a press slide mounted therebetween, the improvement in anti-friction gib means comprising: a flat steel race secured to a vertical surface on each side of said press slide adjacent a side member; flat steel races positioned opposite each of said press slide races and secured to vertical surfaces of each of said press side members and parallel to said press slide races; rollers positioned between said opposed races; roller retaining means to retain said rollers between said races; and means to reciprocate said roller retaining means responsive to the movement of said slide.

4,161,343

CONE RETAINER FOR A ROTARY ROCK BIT

Homer J. Brashear, De Soto, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 21, 1978, Ser. No. 926,768
Int. Cl.[2] F16C *19/00*
U.S. Cl. 308—8.2 **3 Claims**



1. A method of rotatably locking a rock boring cutter assembly upon a bearing pin, comprising the steps of:

providing a cantilever bearing pin with radial and axial passages;

providing a rock boring cutter assembly with an annular inner surface that can be positioned over said bearing pin and an inner annular groove in said annular inner surface;

providing a retainer assembly, said retainer assembly comprising a multiplicity of locking rods;

positioning said locking rods in said radial passages in said bearing pin;

positioning said rock boring cutter assembly on said bearing pin; and

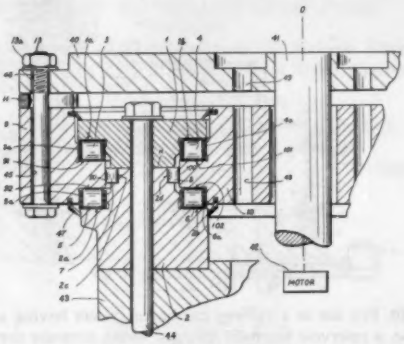
positioning an expander rod in said axial passage in said bearing pin to contact and cause said locking rods to move radially outward in said radial passages and bridge between said bearing pin and said groove in said rock boring cutter assembly to rotatably lock said rock boring cutter assembly on said bearing pin.

4,161,344

METHOD OF AND MEANS FOR ROTATABLY SUPPORTING A LOAD

Aimé Delarbre, Chatillon, France; Joachim Boesner, Velbert, and Michael Blank, Wuppertal, both of Fed. Rep. of Germany, assignors to Kugelfischer Georg Schafer & Co., Schweinfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 820,356, Jul. 29, 1977, abandoned. This application Oct. 14, 1977, Ser. No. 842,360
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1976, 2634776
Int. Cl.[2] F16C *19/00*
U.S. Cl. 308—222 **9 Claims**



1. A mounting for a load to be at least partly rotated about a vertical axis, comprising:

stationary support means including an annular member centered on said axis and provided with inner and outer peripheral guide tracks;

rotatable support means including a first and a second annular carrier coaxial with said annular member, said first carrier engaging said outer guide track, said second carrier engaging said inner guide track;

a load-carrying platform spacedly overlying said carriers and said member; and

fastening means for selectively connecting said platform with either of said carriers while leaving the respectively other carrier separated therefrom, said fastening means including spacing means interposable between said platform and said other carrier for holding said platform out of contact with the carrier previously connected therewith.

4,161,345

SUPPORTING FRAME FOR FURNITURE

James A. Begun, Montpelier, Vt., assignor to Howard W. Martin, Montpelier, Vt., a part interest

Filed Apr. 18, 1978, Ser. No. 897,337
Int. Cl.[2] A47B *91/08*
U.S. Cl. 312—253 **12 Claims**

1. A frame for defining a configuration for arranging and supporting furniture thereon, said frame including

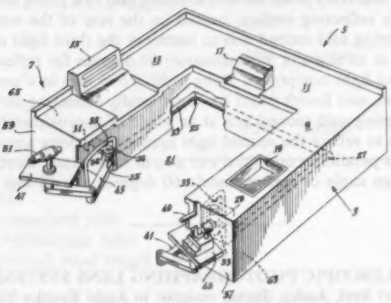
a plurality of rod-like members joined together to define a configuration corresponding to a desired arrangement of furniture,

said configuration of said joined rod-like members having first and second end portions,

said configuration of said joined rod-like members being carried by a supporting floor,

first and second furniture supporting stanchions affixed to said first and second end portions, respectively,

said first and second furniture supporting stanchions being of sufficient height relative to the height of said furniture such that said furniture rests upon the top of said supporting stanchions when said furniture is positioned above said plurality of joined rod-like members comprising said frame, wherein said supporting stanchions support said furniture mounted thereon,



said furniture concealing said plurality of joined rod-like members when said furniture is positioned thereabove,

armature means for supporting additional equipment, said armature means being pivotably mounted to at least one of said furniture supporting stanchions such that said additional equipment can be pivoted into and out of predetermined positions,

said furniture supported by said supporting stanchions and said supporting stanchions defining at least one compartment therebetween for storing said additional equipment, said armature means and said additional equipment carried thereon being pivotable into and out of said defined compartment.

4,161,346

CONNECTING ELEMENT FOR SURFACE TO SURFACE CONNECTORS

Gabriel B. Cherian, York, and William S. Scheingold, Palmyra, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 22, 1978, Ser. No. 935,839

Int. Cl.[2] H05K *1/12*

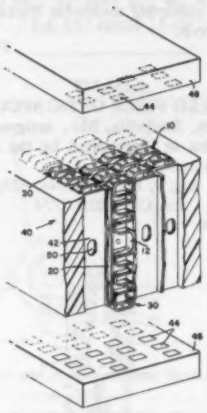
U.S. Cl. 339—17 M **8 Claims**

1. A connecting element for interconnecting electrical circuits on two devices having identically arranged circuit pad patterns, which comprises:

a. a body portion having multiple, S-shaped spring sections on both sides of a center section;

b. contacts at the free ends of the spring sections; and

c. a resilient shorting beam attached to the center section and spaced from the body portion, said beam extending to the



contacts at the ends of the spring section and adapted to be biased thereagainst.

4,161,347

CONNECTOR FOR AN OPTICAL FIBRE LINK

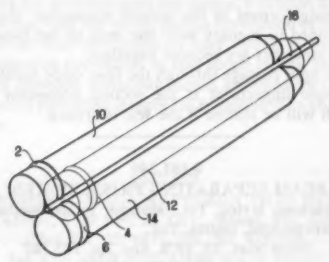
André Tardy, St. Germain les Arpajon, France, assignor to Compagnie Generale d'Electricite, Paris, France

Filed Oct. 20, 1977, Ser. No. 843,920

Claims priority, application France, Nov. 9, 1976, 76 33753

Int. Cl.[2] G01B *5/14*

U.S. Cl. 350—96.21 **8 Claims**



1. Connector for an optical fibre link comprising:

at least one flexible optical fibre constituting a light guide;

three holding rods which are cylinders of revolution;

clamping means for holding said holding rods parallel to one another and in contact in pairs by their lateral surfaces along three rectilinear contact lines and forming between them a holding channel delimited by the facing parts of the lateral surfaces of said rods;

an end section of the fibre being disposed in said holding channel;

and guide means pressing on the lateral outside surface of the assembly formed by the three holding rods for guiding the end section of the fibre with precision and without risk of damage up to a portion ensuring its optical connection with another optical element,

the improvement comprising: said three holding rods having the same diameter, said rods comprising grooves cut respectively at a constant depth in said holding rods, around said rods at a common distance from the end of the holding channel and resilient means comprising three identical resilient rings disposed respectively in said grooves, with

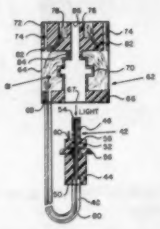
said rings projecting from the lateral surfaces of the rods with projecting portions of said rings being reduced locally by compression and resilient deformation under action of the clamping means on contact lines between said holding rods.

4,161,348

PREASSEMBLED FIBER OPTIC SECURITY SEAL

Reinhard R. Ulrich, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 9, 1977, Ser. No. 823,077
Int. Cl.[2] G02B 5/16
U.S. Cl. 350—96.20 **10 Claims**



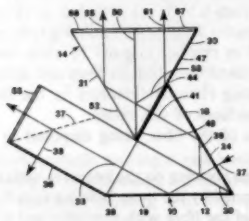
1. A preassembled fiber optic seal comprising:
a fiber optic bundle;
a first connector for securing the outward ends of the bundle together, whereby individual fibers of the bundle are randomly positioned within the connector;
a second connector having an intermediate length of individual fibers wrapped therearound;
means for permanently securing the first connector to the second connector;
an opening formed in the second connector, the opening positioned in registry with the ends of the bundle when the connectors are secured together;
wherein light passage through the fiber optic bundle creates a unique fingerprint at the second connector opening, which will be altered if the seal is broken.

4,161,349

BEAM SEPARATING PRISM SYSTEM

John B. Norman, Irving, Tex., assignor to Recognition Equipment Incorporated, Dallas, Tex.

Filed Mar. 13, 1978, Ser. No. 885,707
Int. Cl.[2] G02B 27/14
U.S. Cl. 350—173 **16 Claims**



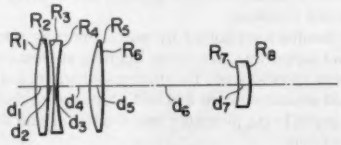
1. A beam separating prism system for an imaging system comprising two pairs of prisms, each pair having a partially reflecting region located between parallel adjacent surfaces of the prisms, one pair of prisms located adjacent to said other pair and having an air gap there between, a first prism of said one pair of prisms positioned to receive light along an entry axis through a nonreflecting entry surface, the region of said one pair intercepting said entry axis at an angle of approximately 60 degrees and reflecting a second and third light component and transmitting a first light component, a second prism of said one pair having a totally reflecting surface intercepting said entry axis at an angle of approximately 30 degrees to reflect the first light component from said entry axis along a first exit axis parallel to the parallel faces of said one pair of prisms, said first prism having a total reflecting surface located on the rear of said entrance surface to reflect said second and third light components along a second axis parallel to said first exit axis, the region of the other prism pair intercepting said second axis at an angle of approximately 60 degrees reflecting the third light component and transmitting the second light component, said other prism pair comprising a third and fourth prisms, said third prism located adjacent said first prism having a totally reflecting surface located on the rear of the surface intercepting said second axis to intercept the third light component at an angle of approximately 30 degrees for reflecting the third light component along a third exit axis in a certain direction, said fourth prism having a totally reflecting surface intercepting said second axis at an angle of approximately 30 degrees to reflect the second light component along a second exit axis parallel to said third exit axis in said certain direction and at an angle of approximately 60 degrees to said first exit axis.

4,161,350

TELESCOPIC PHOTOGRAPHING LENS SYSTEM

Yasunori Arai, Asaka, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1978, Ser. No. 923,750
Claims priority, application Japan, Jul. 11, 1977, 52-82659
Int. Cl.[2] G02B 9/34
U.S. Cl. 350—220 **2 Claims**



1. A telephoto lens system comprising four lenses grouped into four components wherein a first lens is a positive lens having a stronger curvature surface directed to the object, a second lens is negative lens having a stronger curvature surface directed to the object, a third lens is a positive lens having a stronger curvature surface directed to the object and a fourth lens is a negative meniscus lens having a concave surface directed to the object, the distances between the first and second lenses the second and third lenses the third and fourth lenses being progressively greater, said lens system satisfying the following conditions:

$$\frac{N_1 + N_3}{2} < \frac{N_2 + N_4}{2}, N_1 < N_3 \quad (1)$$

$$\frac{\nu_1 + \nu_3}{2} - \nu_2 > 25, \nu_4 > 55 \quad (2)$$

(3) $0.55f < -f_2 < 0.75f$
(4) $0.85 < f_1/f_3 < 1.15$
(5) $0.08f < d_4 < 0.15f$
(6) $0.35f < d_6 < 0.5f$
(7) $f < -R_2 < 1.5f$
(8) $0.65f < -R_3 < 0.95f$
(9) $0.35f < R_5 < 0.45f$
(10) $0.1f < -R_7 < 0.2f$

where: N_i is the refractive index of the i-th lens on d-line;
ν_i is the Abbe's number of the i-th lens;

f is the overall focal length;
f_i is the focal distance of the i-th lens
d_k is the distance between the k-th and (k+1)th lens surfaces; and
R_k is the radius of curvature of the k-th lens surface and further defined by:
$f=100$ $F=1:3.5$ $f_B=27.68$ $K=0.94$ $-f_2=62.3$ $f_1/f_3=1.03$

lens surface	R	d	n	ν
1	49.692			
		4.026	1.51633	64.1
2	−111.380			
		2.226		
3	−74.103			
		1.282	1.68893	31.1
4	102.736			
		10.031		
5	41.067			
		3.569	1.62230	53.2
6	−2355.821			
		43.231		
7	−17.489			
		2.308	1.51633	64.1
8	−34.694			

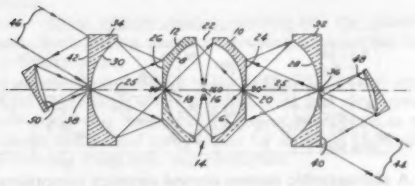
where
F=aperture ratio
K=telescopic ratio
f_B=back focal length

4,161,351

ALL-REFLECTIVE OPTICAL TARGET ILLUMINATION SYSTEM WITH HIGH NUMERICAL APERTURE

Carlton E. Thomas; Robert D. Sigler, both of Ann Arbor, Mich., and John G. Hoeger, Newport, Calif., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed May 7, 1976, Ser. No. 684,095
Int. Cl.² G02B *5/10*
U.S. Cl. 350—294 **10 Claims**



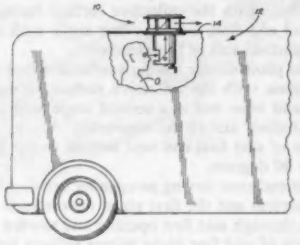
1. In an optical system for providing illumination of a target region at high numerical aperture from a pair of generally confluent collimated beams of electromagnetic energy, and comprising a pair of opposed first ellipsoidal reflectors disposed to define a target cavity and having respective first openings on a system axis, a pair of plane reflectos disposed and directed outwardly of said target chamber normal to said system axis, and a pair of second ellipsoidal reflectors disposed and directed oppositely of respective plane reflectors and having respective second openings on said system axis, the improvement comprising first and second eccentric pupil paraboloidal reflectors respectively disposed on said system axis outwardly of a second ellipsoidal reflector to intercept and focus one of said collimated beams into the opening of the associated second ellipsoidal reflector.

4,161,352

VEHICLE MOUNTED SURVEILLANCE APPARATUS

Larry L. Felix, 1250 Manzanita, Canby, Oreg. 97013, and Norman P. Fandrei, 3822 SE. Spaulding, Milwaukie, Oreg. 97222

Filed Mar. 14, 1977, Ser. No. 777,062
Int. Cl.² G02B *23/08*
U.S. Cl. 350—301 **7 Claims**



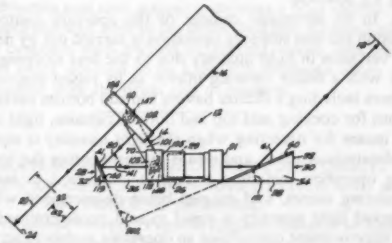
1. Apparatus for use in surveillance from a vehicle comprising:
adapter means having an aperture mounted adjacent to a wall opening in the vehicle;
casing means rotatably mounted on said adapter means operable for revolving about its longitudinal axis within the vehicle;
scope means mounted within said casing means including an assembly operable for selectively shifting said scope means in the direction of said longitudinal axis through the wall opening, said assembly including an elongate, threaded shaft rotatably connected to said scope means and a nut means rigidly secured to said casing means for receiving said shaft so that rotation of said shaft imparts longitudinal shifting to said scope means, said scope means further including an elongate slot formed in a wall portion thereof for receiving said nut means, a portion of said slot contacting said nut means during revolution of said casing means so that revolution of said casing means imparts simultaneous revolution to said scope means; and
a pair of opposed, reflecting means mounted on said scope means for reflecting images from outside the vehicle to the inside.

4,161,353

SECONDARY IMAGE REPRODUCTION DEVICE

Herman Centner, 8730 SW. 21 Terr., Miami, Fla. 33165

Filed Jul. 22, 1977, Ser. No. 818,054
Int. Cl.² A61B *3/02*; G03B *21/26, 21/28*
U.S. Cl. 351—30 **15 Claims**



1. For attachment to a projector having a beam opening for passage of a primary beam of emergent light rays to project a primary image on a main surface and wherein the projector includes a main lens system;
a device to simultaneously produce a duplicate image of the

primary image on a second surface, said device comprising:

a member including a first end zone portion and a second end zone portion and an intermediate portion between the end zone portions, and said member having a longitudinal axis through the portions and defining a secondary light beam path,

a first plane mirror having a reflective surface on the first end zone with the reflective surface facing toward said second end zone and at a first angle with respect to the longitudinal axis of the member;

a second plane mirror having a reflective face on the second end zone with the reflective surface facing toward said first end zone and at a second angle with respect to the longitudinal axis of the member,

the sum of said first and said second angles being substantially 90 degrees,

said first end zone having an opening between the intermediate portion and the first plane mirror such that a line of sight through said first opening and toward the reflective surface of said first plane mirror reflects light rays entering the first opening which impinge upon the first plane mirror parallel to said axis along said secondary light beam path towards the second plane mirror; and

said second end zone having an opening between the intermediate portion and the second plane mirror so that light rays traveling along the light beam path are reflected through said second opening,

means to mount the device to a projector oriented so that (a) the first plane mirror and (b) the first opening in the first end zone are in the peripheral portion of the primary beam of emergent light rays projecting the primary image on the main surface to reflect a portion of said primary beam from the first mirror parallel to the axis of the member to be reflected by the second mirror to simultaneously project and produce a secondary image on a second surface which is a duplication of the primary image;

an auxiliary lens means in the path on the intermediate portion with a lens axis parallel to the axis of the member to focus the light rays reflected from the first mirror to the second mirror on the second surface; and

means connecting the second end zone portion to the intermediate portion including adjustment means to rotate the second mirror about the axis of the member and relative to the first mirror through 180 degrees of rotation.

4,161,354

TOP SHUTTER CURTAIN RELEASE MECHANISM FOR AN AUTOMATIC APERTURE VALUE CONTROL CAMERA

Hiroshi Kurei, Kawagoe, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

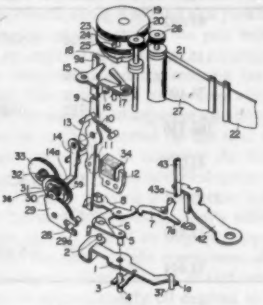
Filed Aug. 26, 1977, Ser. No. 828,117

Claims priority, application Japan, Aug. 27, 1976, 51-102413

Int. Cl.[2] G03B 7/08, 9/02

U.S. Cl. 354—36 **2 Claims**

1. In an automatic camera of the aperture control type wherein the lens stopping operation is carried out by detecting the variation in light quantity due to the lens stopping operation with a finder viewing mirror in its raised position, said camera including a shutter having top and bottom curtains and means for cocking said top and bottom curtains, light measuring means for detecting when the light quantity is equal to a predetermined value, and means for terminating the lens stopping operation including a magnet connected to said light measuring means, said magnet being de-energized when the detected light quantity is equal to said predetermined value, the improvement comprising an operating member carrying an armature for contacting said magnet when energized, said operating member being biased to move said armature away from said magnet upon de-energization of said magnet, lens operation terminating means operatively connected with said operating member and cooperating therewith for terminating the lens stopping operation when said operating member is released by said magnet to move away from said magnet, said lens operation terminating means including a plurality of intermeshed gears having at least first and second gears, said first gear being engagable by a control lever operatively associated with said operating member, a unidirectional clutch means operatively coupling at least two of said gears for permitting rotation of some of said gears in the return direction even when said control lever engages and stops rotation of said first gear



and for preventing further lens stopping operation when said first gear is engaged and stopped by said control lever, and top curtain release means operatively connected with said operating member and cooperating therewith for releasing said top curtain when said operating member is released by said magnet to move away from said magnet whereby the release of said top curtain and the termination of the lens stopping operating occur simultaneously at a time following the raising of said viewing mirror.

4,161,355

PHOTOGRAPHIC CAMERA CONTROL CIRCUITRY

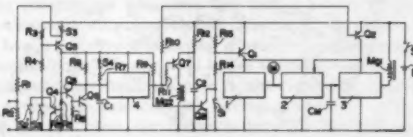
Masayoshi Sahara, Sannan, and Masaaki Nakai, Nara, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 3, 1978, Ser. No. 875,074

Claims priority, application Japan, Feb. 14, 1977, 52/15299

Int. Cl.[2] G03B 7/08, 9/64

U.S. Cl. 354—51 **6 Claims**



1. A photographic camera control circuitry comprising:

a light measuring circuit for generating a light representative signal, said light measuring circuit including a photocell receiving light of the scene to be photographed, through a camera objective and a diaphragm aperture;

storing means for storing said light representative signal;

storage switch means for connecting and disconnecting said storing means to or from said light measuring circuit;

exposure time control means for initiating shutter closing at a time commensurate with the signal stored in said storing means;

a first control circuit for energizing said light measuring circuit and actuating said storage switch means to connect said storing means to said light measuring circuit;

a second control circuit for energizing said exposure time control means and for deactuating said storage switch means to disconnect said storing means from said light measuring circuit;

delay means for generating an output after a lapse of a given time period from the actuation thereof;

electromagnetic means for actuating a camera mechanism to initiate an exposure sequence;

a third control circuit for energizing said electromagnetic means;

a first switch means for actuating said first control circuit; and

second switch means for actuating said first control circuit and said delay means, said delay means being connected with said second and third control circuits so that both said circuits are actuated in response to the output of said delay means.

4,161,356

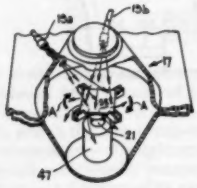
APPARATUS FOR IN-SITU PROCESSING OF PHOTOPLATES

James W. Giffin, 4653 Columbia River Ct., San Jose, Calif. 95136; Michael A. De Santis, 3116 Penetencia Creek Rd., San Jose, Calif. 95132, and John S. Burchard, 630 Dorrance Rd., Boulder Creek, Calif. 95006

Division of Ser. No. 761,135, Jan. 21, 1977, abandoned. This application Jun. 20, 1977, Ser. No. 807,884

Int. Cl.[2] G03D *3/02;* **B08B** *3/02*

U.S. Cl. 354—323 **4 Claims**



1. An apparatus for in-situ processing of photoplates comprising,

a lower frustro-conical bowl-shaped member having sloping side walls and a first rim and an upper frustro-conical bowl-shaped member having sloping side walls and a second rim, said first and second rims disposed adjacent to each other such that the sloping side walls of said lower and upper bowls define most of a closed chamber therebetween,

a motor-driven spinner chuck projecting into the chamber, said chuck having means for rotating a photoplate in a horizontal plane,

spray means flush mounted to the inside walls of said upper bowl at locations where dripping from said spray means will avoid the horizontally rotating photoplate in the spinner chuck, said spray means for directing photoplate processing fluids onto said photoplate.

4,161,357

PHOTORECEPTOR HEATING APPARATUS

John L. Herman, Penfield, and John Stavisky, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

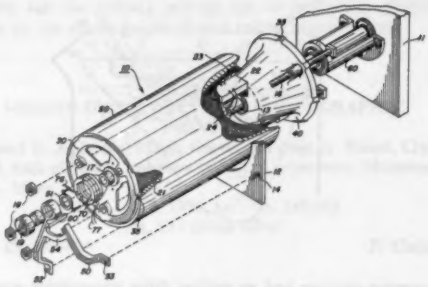
Filed Sep. 2, 1977, Ser. No. 830,258

Int. Cl.[2] G03G *15/00;* **G03B** *27/52*

U.S. Cl. 355—3 DR **4 Claims**

1. A copier having a substantially cylindrical photoreceptor, a shaft journaled to said copier, endbells adapted for mounting said photoreceptor to said shaft, said photoreceptor including energy receptor means on a first surface thereof, and heater/controller means adapted for connection to said energy receptor means for controlling temperature variations of a second surface of the photoreceptor, the improvement comprising:

power transmission means adapted to be mounted over said shaft, said power transmission means including a slip ring assembly that comprises three concentric annular members, one of said members being stationary, and support means adapted to fit over said shaft and against said power transmission means wherein said one of said annular members has projection means thereon for mating with said support means and preventing said one of said annular members from rotating relative to said shaft.



4,161,358

SHEET SUPPORTING DRUM DURING DEVELOPMENT IN MACHINES FOR ELECTROSTATICALLY PREPARING PRINTING MATRICES

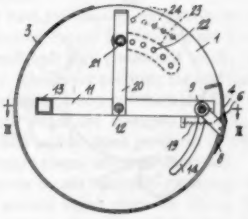
Vittorino Boschet, Milan, Italy, assignor to Grafosol, S.p.A., Milan, Italy

Filed Jan. 26, 1978, Ser. No. 872,487

Claims priority, application Italy, Feb. 1, 1977, 20545/77[U]

Int. Cl.[2] G03G *15/00*

U.S. Cl. 355—3 DR **3 Claims**



1. A sheet supporting drum for use during development of a latent image in machines for electrostatically preparing printing matrices, provided with front and rear grippers, for retaining said sheet in its proper position on the drum surface of which the rear gripper is angularly displaceable over the drum surface, wherein said rear gripper comprises a fillet carried by arms passing through slots in the drum shell and mounted on a rotatable common shaft carried by bearing means, said common shaft being adapted to be angularly displaced about an axis coincident with the drum axis of rotation.

4,161,359

APPARATUS FOR SYNCHRONIZING MOVEMENT BETWEEN AN OPTICAL SCANNING SYSTEM AND AN IMAGING MEMBER

Roger D. Masham, Newport Pagnell, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 25, 1977, Ser. No. 844,991

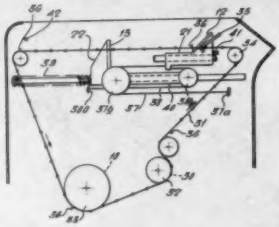
Claims priority, application United Kingdom, Dec. 17, 1976, 52776/76

Int. Cl.[2] G03G *21/00*

U.S. Cl. 355—8 **6 Claims**

1. A photocopier including a rotatable drum having a photo-

sensitive surface thereon, an optical system for scanning successive portions of an object plane and directing light reflected from said object plane onto successive portions of said photosensitive surface, said optical system comprising a reciprocable



scanning carriage and an endless drive transmission member which continuously, drivingly engages said drum and which discontinuously, drivingly engages the carriage by means of detents spaced along said member by a distance equal to the circumference of said drum.

4,161,360

LIQUID DEVELOPMENT APPARATUS

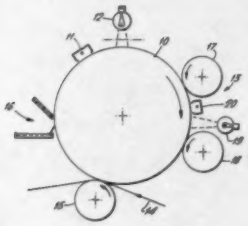
Kenneth W. Smith, Welwyn Garden City, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 28, 1977, Ser. No. 837,137

Claims priority, application United Kingdom, Dec. 31, 1976, 54465/76

Int. Cl.² G03G *15/00*

U.S. Cl. 355—10 **7 Claims**



1. Electrostatographic imaging apparatus including a development apparatus for the liquid development of electrostatic latent images on an imaging surface, the development apparatus comprising first and second developer applicators arranged for successive application of developer liquid to the surface, the first and second applicators having retaining recesses for developer liquid, and the recesses of the first and second applicators being of relatively high and low frequencies, respectively, for enhanced developed image quality.

4,161,361

WET TYPE ELECTROPHOTOGRAPHIC APPARATUS

Ikuo Soma, Yokohama, and Yusaku Takada, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1977, Ser. No. 827,021

Claims priority, application Japan, Dec. 3, 1976, 51-145460

Int. Cl.² G03G *15/10*

U.S. Cl. 355—10 **28 Claims**

1. An electrophotographic apparatus comprising:

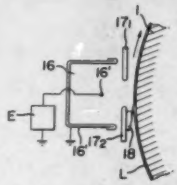
a movable photosensitive medium which at least moves upwardly along its path of movement;

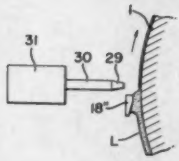
means for forming an electrostatic latent image on said photosensitive medium;

developing means for supplying developing liquid to the surface of said photosensitive medium to develop the electrostatic latent image thereon into a toner image;

squeeze power forming means disposed downstream of said developing means with respect to the path of movement of said photosensitive medium, and opposed to said photosensitive medium at a position where said photosensitive medium moves upwardly, said squeeze power forming means being spaced from the layer of developing liquid formed on said photosensitive medium;

a liquid thickness evening member disposed to contact the developing liquid dammed up and bulged by the action of said squeeze power forming means to make uniform the





thickness of the layer of developing liquid squeezed by said squeeze power forming means and which then flows down said photosensitive medium, said liquid thickness evening member being provided with a liquid-contacting surface having a planar surface region which is substantially parallel to the surface of said photosensitive medium, and a contiguous sloped surface region which extends downwardly from said planar surface region, wherein the clearance between said sloped surface region and the surface of said photosensitive medium continuously increases in the direction opposite to the direction of movement of said photosensitive medium.

4,161,362

DOCUMENT CODING

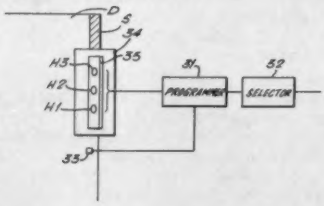
Neil B. Blake, Harpenden, England, assignor to Rank Xerox Limited, London, England

Filed Sep. 12, 1977, Ser. No. 832,314

Claims priority, application United Kingdom, Sep. 17, 1976, 38622/76

Int. Cl.² G03B *27/52*

U.S. Cl. 355—40 **13 Claims**



1. Apparatus for color-coding documents including means

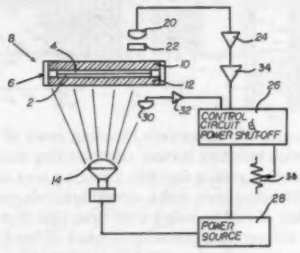
for automatically marking successive documents serially presented thereto with mutually different colors in a preselected sequence, wherein said marking means includes a plurality of marking devices operable in the preselected sequence, wherein each said device is loaded with a different color marking material, said marking devices to be operated singly and in combination to produce a range of colors.

4,161,363

INSTANTANEOUS EXPOSURE CONTROL FOR FILM

Rolf D. Kahle, Saratoga, Calif., assignor to Quantor Corporation, Mountain View, Calif.

Filed Aug. 4, 1975, Ser. No. 601,756
Int. Cl.[2] G03B *27/74, 27/78*
U.S. Cl. 355—68 **20 Claims**



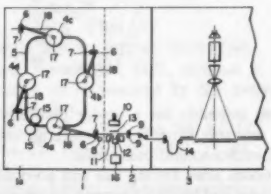
8. A system for controlling the exposure of light sensitive film so that the relative light density of images on the film remains constant irrespective of variations in the quality or quantity of light to which the film is exposed or variations in the relative light transmissivity of a light sensitive substance of the film, the substance substantially instantaneously changing its light transmissivity as a function of its exposure to light, the system comprising: a light source; means for positioning the film so that light from the source exposes the film; a light sensor positioned on the side of the film opposite from the light source for sensing the intensity of light being transmitted by the film; and means operatively coupled with the sensor for terminating the exposure of the film to light from the source after and in response to a predetermined change in the sensed light intensity and, thereby, in the light transmissivity of the film; whereby the exposure of the film is carried out, controlled and terminated as a function of the change in the light transmissivity of the film induced by light from the source.

4,161,364

PICTURE PRINTING APPARATUS

Yoshimitsu Hanai; Makio Hirata, and Mikio Kogane, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Nov. 3, 1977, Ser. No. 848,426
Claims priority, application Japan, Nov. 4, 1976, 51-132933
Int. Cl.[2] G03B *27/58;* B65H *19/18*
U.S. Cl. 355—72 **4 Claims**



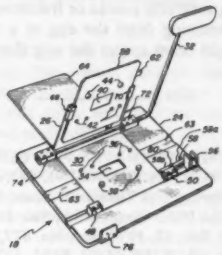
1. In a picture printing apparatus for processing a roll of negative film, of the type including an exposure section fed with printing paper from a supply section, the improvement wherein said supply section comprises means for supporting and successively conveying a plurality of roll papers to be fed to said exposure section, and means for successively connecting the ends of said roll papers as they are fed to said exposure section, whereby the length of the roll paper is substantially infinite and the printing process can be performed continuously for the entire length of each roll of negative film.

4,161,365

NEGHOLD ASSEMBLY FOR PHOTOGRAPHIC PRINTER

Richard D. Anderson, Maple Grove, and John A. Wedel, Crystal, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Jan. 9, 1978, Ser. No. 868,080
Int. Cl.[2] G03B *27/62*
U.S. Cl. 355—75 **27 Claims**



1. A neghold assembly for use in a photographic printer, the neghold assembly comprising:

first and second insert plates having mating light transmitting portions;

a transport base for holding the first insert plate;

top insert holder means for holding the second insert plate;

handle means operably connected to the top insert holder means for selectively pivoting the top insert holder means to a clamping position in which the first and second aperture insert plates are clamped together to hold photographic film and to open positions in which the first and second insert plates are separated; and

insert lift lever means operably engaging the handle means and the second insert plate for lifting the second insert plate to release clamping of the first and second insert plates when the handle means is depressed beyond the clamping position, thereby permitting adjustment of film position without pivoting the second insert plate to an open position.

4,161,366

PROCESS AND APPARATUS FOR THE AUTOMATIC EXAMINATION OF EGGS FOR CRACKS OR PLACES OF FRACTURE IN THEIR SHELL

Johannes Bol, Heppenheim, and Hans-Ulrich Freund, Friedrichsdorf, both of Fed. Rep. of Germany, assignors to Battelle-Institute e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 14, 1977, Ser. No. 768,601
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1976, 2605721
Int. Cl.[2] G01N *33/08, 21/32;* G02B *27/17*
U.S. Cl. 356—56 **11 Claims**

1. A process for detecting cracks or fractures in an egg shell comprising the steps of:

(a) rotating the egg about its longitudinal axis;

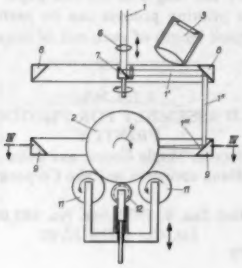
(b) focussing at least one beam of light from a light source;

(c) directing the focussed light beam onto a rotatable mirror;

(d) rotating the rotatable mirror such that the light beam

scans the egg shell along circumferential paths including both ends of the egg; and

(e) detecting and measuring the intensity of light emanating



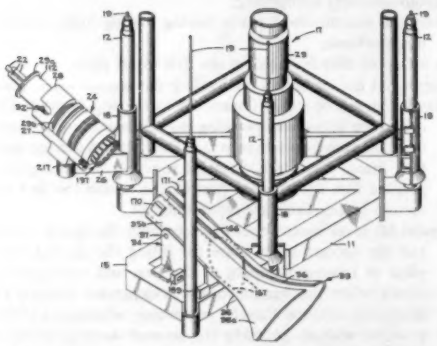
from the egg such that cracks or fractures can be located, the light emanating from the egg at a higher intensity when the light beam enters the egg through a crack or fracture.

4,161,367

METHOD AND APPARATUS FOR COMPLETING DIVERLESS SUBSEA FLOWLINE CONNECTIONS

Glen H. Culper, Spring, and Thomas J. Ames, Houston, both of Tex., assignors to FMC Corporation, San Jose, Calif.

Filed Feb. 15, 1978, Ser. No. 877,924
Int. Cl.[2] E21B *43/01*; F16L *1/00*
U.S. Cl. 405—169 **32 Claims**



1. Remote-controlled apparatus for connecting a first connector, mounted on one end of a first flowline with a second connector mounted on one end of a second flowline and for securing the ends of the connectors in precise axial alignment without damage to seals used to interconnect the connectors, in a fluid-tight arrangement, said apparatus comprising:

a pull-in cable;

means for connecting said pull-in cable to the geometric center of the free end of said first connector;

means for moving said pull-in cable and said first connector into axial alignment with said second connector;

an annular seal;

means for mounting said seal adjacent the free end of one of said first and second connectors;

means for securing the ends of said first and said second connectors in precise axial alignment without pressing the ends of said connectors against said seal; and

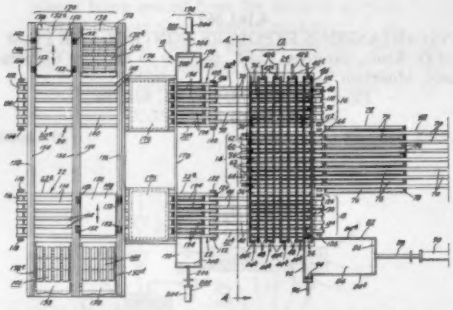
means for pressing the ends of said first and said second connectors against said seal in a fluid-tight relationship after the connectors are secured in precise axial alignment.

4,161,368

BRICK BLENDING APPARATUS

Alfred Batzdorff, Langhorne, Pa., assignor to The Keller Corp., Hatfield, Pa.

Filed Feb. 6, 1978, Ser. No. 875,304
Int. Cl.[2] B65G *59/02*
U.S. Cl. 414—114 **12 Claims**



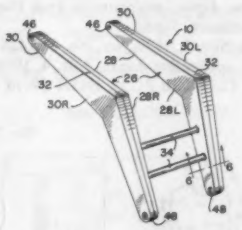
1. Apparatus for selectively blending rows of bricks, comprising a brick blending station, said blending station including a brick blending area, a first brick staging area on one side of said brick blending area, and a second brick staging area on the opposite side of said blending area from said first staging area, means for delivering a plurality of rows of bricks to said first staging area in a spaced parallel disposition, means for delivering a plurality of rows of bricks to said second staging area in a spaced parallel disposition parallel to the brick rows delivered to said first staging area, transfer means for selectively moving rows of bricks from said first staging area into said blending area, transfer means for selectively moving rows of bricks from said second staging area into said blending area to provide a blended array of brick rows, guide means in said blending station for guiding said brick rows into said blending area, said guide means comprising a plurality of parallel fence elements and means for selectively raising or lowering said fence elements into an operative position within said blending station, and conveyor means for removing the blended array of bricks from said blending area.

4,161,369

LOADER BOOM ASSEMBLY

Emil F. Moreno, Melrose Park, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Feb. 2, 1977, Ser. No. 764,781
Int. Cl.[2] E02F *3/81*
U.S. Cl. 414—722 **2 Claims**



1. A boom assembly for a loader pivotally mounted on a tractor and movable supporting a material handling member, wherein the improvement comprises:

a pair of boom arms having one end pivotally connected to said tractor and having a second end movably supporting said material handling member, said boom arms comprising;

a pair of matched inner and outer C-channels having hori-

zontal and vertical surfaces welded at the contact edges of said horizontal and vertical surfaces welded at the contact edges of said horizontal surfaces to form a box boom arm, with only said inner C-channels having aligned cross tie apertures in said vertical surfaces forward of said tractor;

a cross tie member passing through said aperatures and welded to said vertical surface of said inner C-channel and to said vertical surface of said outer C-channel.

4,161,370

WINDMILL

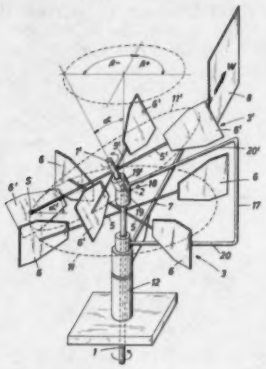
Gottfried Oppolzer, Geylinggasse 15, A-1130 Vienna, Austria

Filed Apr. 11, 1978, Ser. No. 895,447

Claims priority, application Austria, Apr. 18, 1977, 2683/77; Feb. 1, 1978, 680/78

Int. Cl.[2] F03D *3/02*

U.S. Cl. 416—17 **18 Claims**



1. A windmill comprising

shaft means defining a vertical axis,

first and second windmill wheels mounted on and non-rotatably connected by shaft means, each of said windmill wheels having rigidly interconnected vanes, which are adapted to return opposite to the direction of the wind,

said first and second windmill wheels defining respective axially outermost flight circle planes which intersect at an acute angle,

the vanes of each of said windmill wheels being adapted to describe an orbital line, which is tangent to a corresponding orbital line described by the vanes of the other windmill wheel at an apex, which is disposed between said flight circle planes, and

control means for moving said windmill wheels relative to each other so as to move said apex about said vertical axis and thus to vary said angle when measured in a vertical plane that is at right angles to the direction of the wind,

said vanes of each of said windmill wheels interdigitating with those of the other windmill wheel adjacent to said apex so that said vanes shelter each other from the wind as they return when said apex lies in said vertical plane.

4,161,371

SELF-REGULATING TURBINE

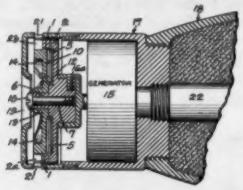
Milton A. Sheppa, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 16, 1949, Ser. No. 127,612

Int. Cl.[2] F03D *1/02*; F42C *15/40*

U.S. Cl. 416—43 **1 Claim**

1. A self-regulating turbine comprising an inner turbine rotor having outwardly extending vanes with air passages between them, an outer rotor member concentric with and extending radially beyond said inner rotor and having limited circumferential motion relative to said inner rotor, said outer rotor member coupled to a load, bosses on said outer member disposed to substantially obstruct the outward flow of air from said air passages in one extreme circumferential position of said outer member, but not in the other extreme circumferential position of said outer member, said bosses shaped as to constitute an extention of said vanes when in said other extreme circumferential position whereby to increase the effectiveness of the rotor at low operating speeds, biasing means acting on said inner turbine rotor thereby urging said outer rotor into



said last named position but opposed by air reaction on said vanes toward said first named position, said biasing means comprising a plurality of spring members circumferentially spaced in said outer rotor and directed inwardly thereof, a plurality of spaced studs affixed in said inner turbine rotor and projecting therefrom, said spring members arranged to engage successively said studs to secure non-linear biasing characteristics, and stop means preventing relative rotation of said outer rotor member beyond said other extreme position.

4,161,372

INTERNAL-GEAR FLUID-DISPLACEMENT MACHINE WITH MOVABLE SEPARATING BODY

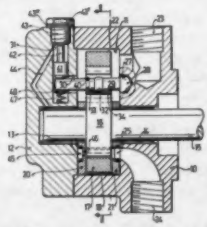
Paul Bosch, Ludwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 28, 1977, Ser. No. 846,525

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1976, 2650908

Int. Cl.[2] F01C *1/10, 19/00*; F03C *3/00*; F04C *1/06*

U.S. Cl. 418—126 **13 Claims**



1. An internal-gear fluid-displacement machine comprising, in combination, a housing having an internal chamber; an internal gear in said chamber; a spur gear located in said chamber and meshing with said internal gear at a meshing region which constitutes a high-pressure zone of the machine during operation, said gears bounding with each other an interspace which constitutes a low-pressure zone of the machine, and a separating region which narrows from said interspace toward said meshing region; an elongated separating body which fills said separating region thus separating said low-pressure and high-pressure zones from one another; an actuating element connected to said separating body for joint displacement substantially longitudinally of the latter, said actuating element being a lever having one end mounted on said housing for pivoting and another end; and means for subjecting said actuating element to a force which acts substantially longitudinally of said separating body and has a magnitude which depends on

the pressure of a fluid present at said high-pressure zone, said subjecting means including a bore in said housing, a piston mounted in said bore and having one end face bounding a pressure space in said bore and another end face facing said other end of said lever, and means for admitting the fluid from said high-pressure zone into said pressure space to act on said piston and press the same against said other end of said lever.

4,161,373

TYPING DEVICE INCLUDING A TYPE DISC

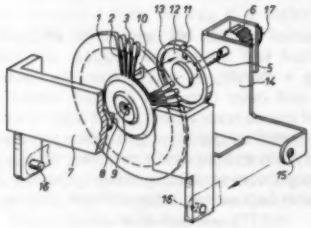
Kurt Chvatlinsky, Wilhelmshaven, Fed. Rep. of Germany, assignor to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Aug. 16, 1977, Ser. No. 825,541

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1976, 2639872

Int. Cl.[2] B41J *1/04*

U.S. Cl. 400—175 **13 Claims**



1. In a typing device including a frame; a drive shaft; support means for rotatably supporting the drive shaft in the frame; and a type disc arranged in the frame for being rotated by the drive shaft; the improvement comprising

(a) a conically centering bearing assembly situated between one side of said type disc and a frame part; said centering bearing assembly being the sole means for the radial centering of said type disc with respect to said drive shaft;

(b) means for coupling said type disc to said drive shaft; said means for coupling being arranged for transmitting solely rotary motions of said shaft to said type disc to thereby prevent radial excursions of said drive shaft from being transmitted to said type disc; and

(c) a spring means axially urging said type disc against said frame part for a conical centering of said type disc on said frame part by said bearing assembly.

4,161,374

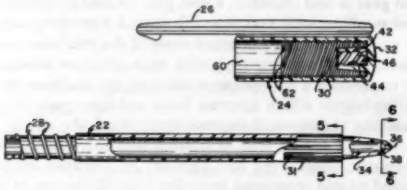
TWIST RETRACTABLE WRITING IMPLEMENT

Harold E. Koeln, Kirkwood, and Walter W. Paige, Jr., Crestwood, both of Mo., assignors to Penn Corporation, Princeton, N.J.

Filed Apr. 1, 1977, Ser. No. 783,639

Int. Cl.[2] B43K *5/16, 7/12*

U.S. Cl. 401—116 **5 Claims**



1. In a twist retractable writing implement having a barrel and a cap threadably received thereon, a scribe element carried by said cap, rotation of said cap longitudinally displacing said scribe element with reference to the barrel alternatively into extended and retracted condition, wherein the cap and the barrel are tubular, said cap having a closed end and said barrel having a first open end and a second end which converges into an opening tip, said cap having an inside diameter substantially the same as the outside diameter of the barrel adjacent its open end, and wherein a socket is mounted on the closed end of the cap for receipt of the scribe element at its end opposite the writing tip, wherein the socket is an annular flange coaxial with the cap and depending from the closed end thereof, the improvement wherein the cap is cooperatively grooved spaced from its open end, said grooves having multiple leads and wherein the cap top abuts the open end of the barrel when the writing tip is fully extended.

4,161,375

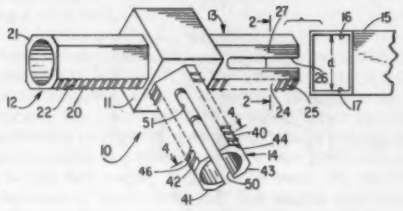
CONNECTOR FOR TUBES OF SQUARE CROSS-SECTION

Pierce M. Murphy, 111 S. Second St., LaCrosse, Wis. 54601

Filed May 5, 1978, Ser. No. 903,251

Int. Cl.[2] F16D *1/00*

U.S. Cl. 403—169 **16 Claims**



1. A connector for tubes of square cross-section comprising:

an elongated hollow metallic member of such size and shape in external cross-section as to be insertable within an end length of a tube for connection therewith, said member having at least two external longitudinal surfaces of minor width on opposite sides thereof;

spaced integral transverse teeth on at least one of said longitudinal surfaces;

the transverse distance between the exterior of said teeth and said opposite longitudinal surface being greater than an internal transverse dimension of a tube to be connected to said member,

whereby relative rotation between a tube and said member inserted therein causes said teeth to bite into an internal surface of the tube and thus establish secure connection.

4,161,376

OFFSHORE FIXED PLATFORM AND METHOD OF ERECTING THE SAME

James E. Armstong, Crosby, Tex., assignor to Pool Company, Dallas, Tex.

Continuation of Ser. No. 685,791, May 20, 1976, abandoned. This application Oct. 28, 1977, Ser. No. 846,317

Int. Cl.[2] E02B *17/04*

U.S. Cl. 405—196 **6 Claims**

1. A non-buoyant offshore fixed platform comprising:

a lower deck having a floor for supporting equipment thereon,

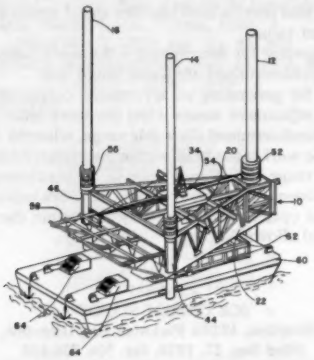
an upper deck having openings therein to permit the passage of equipment therethrough,

a deck crane mounted on the upper deck,

upper deck floor sections removably supported on said upper deck to close the openings in said upper deck thereby providing an upper deck surface, said upper deck floor sections being removable to permit access to the lower deck from the upper deck whereby the deck crane

can be used to move equipment between the upper and lower decks,

truss members interconnected between said lower deck and said upper deck to support said upper deck from said lower deck, said truss members being spaced such that equipment moved through one of said openings may be



lowered onto the area underlying said opening and onto the area underlying openings adjacent thereto,

support legs,

elevating means for moving said upper and lower decks relative to said support legs, and

means for fixing said legs relative to said upper and lower decks.

4,161,377

MOULDING APPARATUS

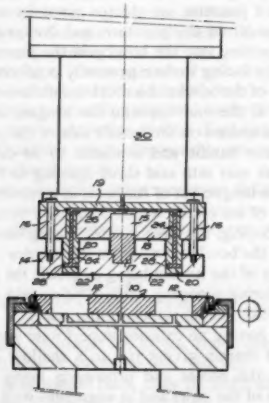
Kenneth H. Strawson, Sheffield, and Joseph Ramsey, Mexborough, both of England, assignors to National Research Development Corporation, London, England

Filed May 31, 1978, Ser. No. 911,210

Claims priority, application United Kingdom, Jun. 15, 1977, 25138/77

Int. Cl.[2] B30B *9/28*

U.S. Cl. 425—3 **5 Claims**



1. In moulding apparatus, a die having at least one die cavity, means constituted by a first piston and cylinder arrangement for opening and closing the die, and means constituted by a second piston and cylinder arrangement for injecting mouldable material into the die, the second annular piston and cylinder arrangement being disposed within the first piston and cylinder arrangement.

4,161,378

PRODUCTION OF MOULDED COMPONENTS IN COMPACTABLE MATERIALS

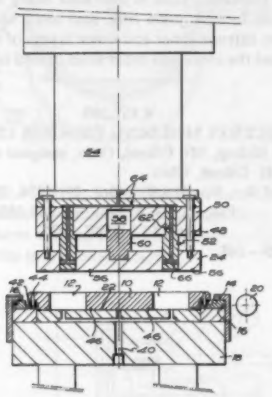
Kenneth H. Strawson, and Gerald Spencer, both of Sheffield, England, assignors to National Research Development Corporation, London, England

Filed May 31, 1978, Ser. No. 911,156

Claims priority, application United Kingdom, Jun. 15, 1977, 25136/77

Int. Cl.[2] B30B *9/28*

U.S. Cl. 425—3 **13 Claims**



1. In a machine for the production of moulded components in a compactable material, a die plate having at least one cavity; a filter assembly forming a closure member for said at least one cavity at one side of said die plate; a die cover plate adapted to be brought into engagement with the opposite side of said die plate; and means for ducting a compactable slurry material to said at least one cavity and for maintaining a slurry pressure such that liquid is expelled through the filter assembly for producing a compact of the material in a required condition in the at least one die cavity.

4,161,379

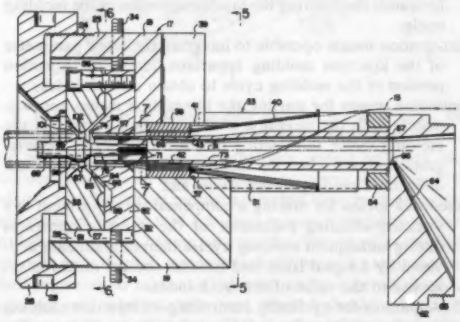
APPARATUS FOR PRODUCING REINFORCED HOSE

John R. Sudyk, Middlefield, Ohio, assignor to The Johnson Rubber Company, Middlefield, Ohio

Filed Jul. 21, 1977, Ser. No. 817,584

Int. Cl.[2] B29D *23/05*

U.S. Cl. 425—112 **21 Claims**



1. An extrusion head for producing reinforced hose comprising a frame providing a mounting surface at one end, an outer annular nozzle assembly mounted on said mounting surface, means connected for adjusting the radial position of said outer nozzle assembly along said mounting surface, said frame including an bore open to said mounting surface, an annular

guide ring in said bore formed with a spiral groove therethrough, said groove operating to guide an open reinforcing fabric strip as an overlapping spiral tube into said outer nozzle assembly, an elongated inner nozzle assembly extending through said guide ring providing an annular inner nozzle at its exit end within said fabric spiral tube, said inner nozzle assembly being axially adjustable relative to said outer nozzle assembly and having its exit end laterally supported by said guide ring, and frame extension laterally spaced from said inner nozzle assembly laterally supporting the other end of said inner nozzle assembly at a location spaced from said guide ring whereby a clearance zone is provided along which a strip of fabric travels to said guide ring, said inner and outer nozzles operating to extrude inner and outer layers of material respectively against the inner and outer sides of said fabric spiral tube.

4,161,380

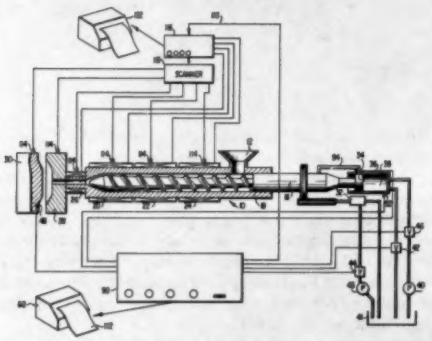
INJECTION MOLDING PROCESS CONTROL

Thomas G. Bishop, Mt. Gilead, Ohio, assignor to HPM Corporation, Mt. Gilead, Ohio

Division of Ser. No. 516,501, Dec. 21, 1974. This application Feb. 23, 1978, Ser. No. 880,453

Int. Cl.[2] B29F *1/06*

U.S. Cl. 425—145 **12 Claims**



1. In an automatically controlled injection molding apparatus having a process control means for producing uniform, high quality articles from synthetic resinous material, the improvement comprising:

material pressure sensing means for sensing the pressure of plasticized synthetic resinous material in the mold;

injection pressure sensing means for sensing the pressure of hydraulic fluid during the injection portion of the molding cycle;

integration means operable to integrate the work parameter of the injection molding apparatus during the injection portion of the molding cycle to obtain a work index;

initiating means for starting the integration means approximately with the inception of the injection portion of the molding cycle; terminating means for stopping the integration means when the material pressure sensing means indicates a predetermined value; and

feedback means for making a compensatory adjustment in a viscosity-affecting parameter of the molding apparatus during subsequent molding cycles thereof and being activated by a signal from said process control means in response to the value of the work index.

5. Apparatus for cyclically controlling an injection molding machine during injection molding of uniform, high quality articles from synthetic resinous material, comprising:

first sensing means for generating a first signal representing pressure of synthetic resinous material in a mold;

second sensing means for generating a second signal representing a work parameter;

adjustment means for changing a viscosity-affecting parameter of subsequent cycles in response to a command signal; and

process control means for controlling a molding cycle having a plasticizing portion, an injection portion and a holding portion, the process control means including

an integrator for generating a work index by integrating said second signal with respect to time during said injection portion until said first signal attains a predetermined value,

a comparator for determining if the work index is within the predetermined allowable range, and

means for generating an appropriate command signal to said adjustment means when the work index is outside the predetermined allowable range, whereby the failure of the work index to lie within the predetermined allowable range effects a variation in the plasticizing portion of subsequent cycles such that the work index of subsequent cycles will more likely fall within the predetermined allowable range.

4,161,381

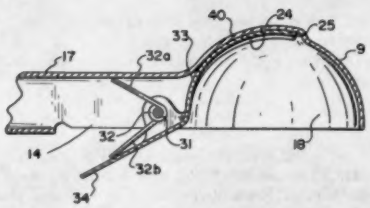
ICE CREAM SCOOP

August M. Sciortino, 1919A Pickwick La., Glenview, Ill. 60025

Filed Sep. 27, 1976, Ser. No. 726,434

Int. Cl.[2] A23P *1/00*

U.S. Cl. 425—286 **3 Claims**



1. In an ice cream scoop which comprises a generally hemispherical bowl and a hollow handle formed and stamped from an integral blank of sheet metal of uniform thickness, the handle being generally polygonal in cross section and connected to the bowl at a juncture but having a relatively short opening adjacent said juncture, an ejector pivotally mounted on the handle adjacent to the juncture and comprising an arcuate tongue projecting into the bowl past the juncture and having its outwardly facing surface generally conforming to the interior surface of the bowl and a short thumb lever arm formed on the ejector at the end opposite the tongue, the thumb lever arm, being disposed on the handle side of the juncture extending above the handle and available to be depressed by the thumb of the user into said short opening to rock the ejector and raise the tongue out of the bowl in a movement adapted to eject a ball of ice cream which may have been formed in the bowl by scooping, the ejector being spring biased to move the tongue into the bowl to bottom on the interior of the bowl, and the majority of the handle being available for gripping by the user's fist during scooping without using said ejector,

the invention herein which comprises:

the bowl having an exterior imperforate arcuate protrusion formed therein giving rise to a shallow interior arcuate recess, the recess and protrusion being located in the bottom of the bowl and in alignment with the ejector and arranged to receive the back surface of the tongue when the tongue is bottomed in the bowl, the recess being configured to mate with the tongue, the depth of the recess being such that the outwardly facing surface of the tongue forms a substantially hemispherical continuum of the interior surface of the bowl when the tongue is bottomed in the bowl within said recess and the recess extending along the bowl at least to the juncture of bowl and handle

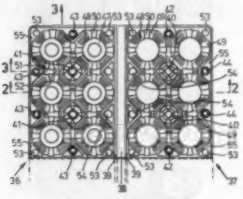
whereby to provide stepped ribs adjacent the recess and connected to said handle.

4,161,382

APPARATUS FOR PRODUCING A CONTAINER MATRIX

Pietro Padovani, Verona, Italy, assignor to Industrie Specializzate Articoli Plastici S.p.A., Verona, Italy

Filed Sep. 9, 1977, Ser. No. 831,822
Claims priority, application Italy, Sep. 15, 1976, 84955 A/76
Int. Cl.[2] B29C *17/14*
U.S. Cl. 425—291 **4 Claims**



1. In a moulding apparatus comprising an upper mould member and a lower mould member for forming a plastics material container matrix having a pre-determined line of rupture between adjacent containers,

said lower mould member having an upper surface for receiving said plastics material and a lower surface;

said lower mould member defining a bore extending from said upper surface to said lower surface;

die means slidably displaceable within said bore for deforming said plastics material, said die means having a plurality of faces;

cutter means slidably displaceable within said bore for cutting said plastics material, said cutter means defining a plurality of faces;

one of said faces of said die means being in a sliding abutment relationship with one of said faces of said cutter means, a longitudinal axis and at least one cutting edge, said at least one cutting edge extending obliquely to said longitudinal axis;

said upper mould member having a pressure member displaceably mounted thereon;

said pressure member having a lower surface;

said lower surface defining a cavity aligned with said bore in said lower mould member;

said cavity receiving at least a portion of said cutter member and said die member when said members are displaced, said cutter member extending into said cavity beyond said die member upon completion of such displacement;

said portion of said die means displaceable into said cavity defining an inclined end face;

said end face being so inclined that maximum deformation of said plastics material occurs along an extension of the line of abutment of said die means and said cutter means.

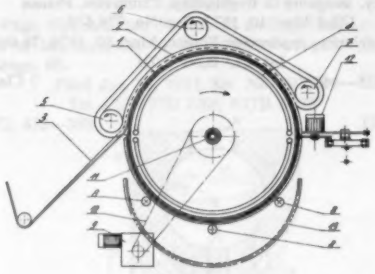
4,161,383

MACHINE FOR CONTINUOUS PRODUCTION OF MOLDED ARTICLES

Carlo Gadani, Via A. Bonzagni 20, Milan, Italy (20149)

Filed May 3, 1978, Ser. No. 902,742
Claims priority, application Italy, May 25, 1977, 23983 A/77
Int. Cl.[2] B29C *17/00, 23/00*
U.S. Cl. 425—302.1 **10 Claims**

1. A machine for the continuous production of molded articles of reinforced thermosetting resins or thermoplastic laminates, characterized in that it comprises a rotatable male mold having in axial and cross-section a shape corresponding to that of the articles to be molded, a female mold formed of flexible elements in the form of endless belts or the like running over rollers, which belts mate along a length of their travel a peripherical segment of the male mold and are moved by the latter together with the laminate to be molded which moves in between the male and female molds and is molded in accordance with the shape of the male mold, said laminate being in



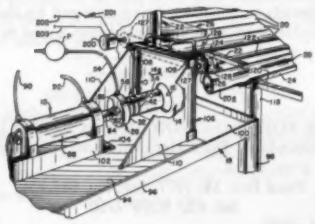
the form of a band uncoiling from a stock roll and entering the machine in a plastic condition, means for hardening the laminate after it has been molded and a cutting device for severing the molded articles to a desired length.

4,161,384

APPARATUS TO FORM A BELL END IN A PLASTIC PIPE

Jimmie R. McGregor, Mineral Wells, Tex., assignor to Harsco Corporation, Camp Hill, Pa.

Division of Ser. No. 769,736, Feb. 17, 1977, Pat. No. 4,134,949.
This application Feb. 13, 1978, Ser. No. 877,362
Int. Cl.[2] B29C *17/02*
U.S. Cl. 425—388 **8 Claims**

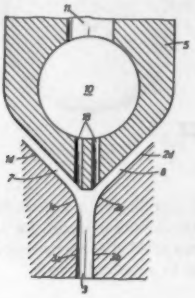


1. In apparatus to form a bell end on a plastic pipe, the combination comprising: support means; a stripper plate having an aperture formed therethrough; means securing said stripper plate to said support means; actuating means secured relative to said support means; a mandrel base; means securing said mandrel base to said actuating means; a plurality of mandrel shell segments having an expander shoulder intermediate opposite ends thereof; means detachably securing said mandrel shell segments to said mandrel base; and a tapered shoulder adjacent said mandrel base, said tapered shoulder having a diameter at its enlarged end which is substantially equal to the diameter of the aperture through said stripper plate and greater than the diameter of the expander shoulder on the mandrel shell segments, said mandrel shell segments having a passage formed therein adjacent said expander shoulder through which air flows from space between the tapered shoulder and the expander shoulder.

4,161,385
EXTRUSION APPARATUS FOR PRODUCING COMPOSITE STRUCTURES

Guy Goldstein, Colmar; Yves Roussin-Moynier, Wintzenheim, both of France, and Gerd Albrecht, Remscheid, Fed. Rep. of Germany, assignors to Beghin-Say, Thumeries, France

Filed Mar. 10, 1977, Ser. No. 776,433
Claims priority, application France, Mar. 10, 1976, 76 06803
Int. Cl.[2] B29F *3/04*
U.S. Cl. 425—462 7 Claims



1. A planar extrusion-die system for achieving a film or foil sheathing network of lengthwise threads or filaments substantially centrally disposed in said film or foil, said system comprising an extrusion slit fed upstream by two flows of polymeric materials, one of which issues from a plurality of flat conduits to form a film or foil and the other from a multitude of small holes drilled into a central component of which the vertical cross-section is in the shape of a punch located in the body of the die upstream of said slit to form threads or filaments, said holes being fashioned in the punch as two parallel rows staggered with respect to holes from one row to the other, said extrusion slit being joined by rounded surfaces to the flat conduits supplying the material forming the film or foil to provide a chamberlike area, said holes issuing immediately upstream of the issuing of said flat conduits into the extrusion slit toward said rounded surfaces and into said chamberlike area, said threads or filaments being engaged by the polymer flow of said flat conduits and brought into a row in the plane of symmetry of said extrusion slit.

4,161,386
NOZZLE FOR INJECTION MOLDING MACHINES

Jesus M. Osuna-Diaz, Rochester, Mich., assignor to Incoe Corporation, Troy, Mich.

Filed Dec. 19, 1977, Ser. No. 862,101
Int. Cl.[2] B29F *1/00*
U.S. Cl. 425—549 12 Claims

1. An internally heated injection molding nozzle comprising body means having an inlet for plastic material at one end, a seat for a plastic material supply member around said inlet, and a discharge orifice for said material at the other end of said body means;

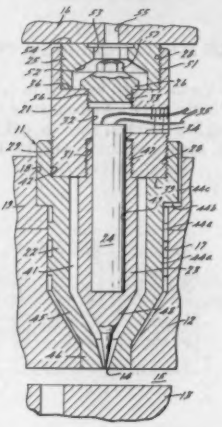
a shank in said body means;

a removable heater in said shank;

means forming a passage extending from said heater laterally through said body means through which electrical leads connected to said heater extend;

means in said body means forming an access opening forwardly of said inlet in a direction toward said discharge orifice through which the heater is removable from said one end of the body means;

means in said body means forming a passage for said plastic material extending from said inlet to said discharge orifice, a portion of said material passage extending around and being separate from said access opening and said lateral passage and another portion thereof being annular in form and separating said shank from said body means;

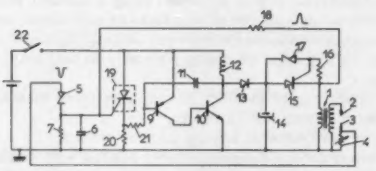


and removable means associated with said access opening separating said plastic material passage from said heater.

4,161,387
DETECTION DEVICES ESPECIALLY FOR THE DETECTION OF FLAMES

Henri E. Courier de Méré, Paris, France, assignor to BICOSA Societe de Recherches, Clichy, France

Filed Oct. 27, 1977, Ser. No. 846,080
Claims priority, application France, Apr. 19, 1977, 77 11712
Int. Cl.[2] F23N *5/00*
U.S. Cl. 431—74 7 Claims



1. A flame detecting apparatus comprising spark electrodes defining a spark-gap therebetween and connected to a source of voltage pulses of a predetermined polarity, said pulses having an amplitude greater than the breakdown voltage of the spark-gap so that each pulse produces a spark between said spark electrodes, further comprising a detection device responsive to high frequency noise signals generated at each spark, said detecting device comprising a diode having two electrodes, wherein one of said electrodes is coupled to one of said spark electrodes to be connected in inverse conduction relationship with respect to said predetermined polarity of said pulses.

4,161,388
SIGNAL DEVICE HAVING PROLONGED ILLUMINATION MEANS

Andre C. Bouchard, Peabody, and Lawrence R. Fraley, Ipswich, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Mar. 17, 1977, Ser. No. 778,395
Int. Cl.[2] F21K *5/02;* F21L *25/00;* F21K *2/00*
U.S. Cl. 431—359 13 Claims

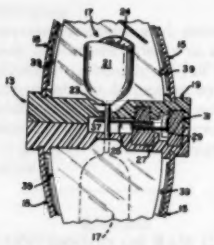
1. In combination, a hand-operable distress signal device comprising:

a supportive structure;

a plurality of percussively-ignitable flashlamps positioned within said supportive structure each for providing a highly intense light output upon actuation thereof, each of said flashlamps including a light-transmitting envelope and a primer tube projection therefrom;

means for singularly actuating each of said flashlamps, said means including a resilient striking mechanism for striking each of said primer tubes to effect deformation thereof;

a light-transmitting housing for covering said flashlamps, said housing positioned on said supportive structure and



including an interior surface adjacent each of said flashlamps; and

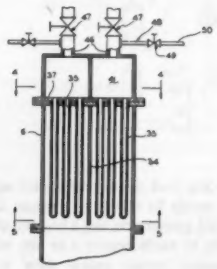
a coating of a long decay photoluminescent material having an excitation range compatible with said high intense light output of said percussively-ignitable flashlamps and positioned on said interior surface of said housing adjacent each of said flashlamps in operative relationship thereto, said photoluminescent material directly receiving the highly intense light emitted from each of said flashlamps and providing a prolonged, visible illumination in response to said direct receipt of light.

4,161,389

FLUIDIZED BED CALCINING SYSTEM

Herbert K. Staffin, and Robert Staffin, both of Colonia, N.J., assignors to Procedyne, Inc., New Brunswick, N.J.

Filed Apr. 7, 1978, Ser. No. 894,240
Int. Cl.[2] F27B *15/00*
U.S. Cl. 432—58 **4 Claims**



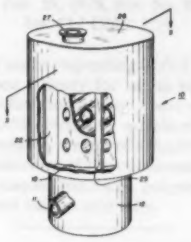
1. Filter apparatus for filtering the off-gas from the bed of a fluidized bed calcining system for heating granular solids comprising at least one fluidized bed reactor to receive a charge of solids, means to heat the solids, and means to force a gas through the solids, said filter apparatus comprising a plurality of gas-permeable filter elements interposed in the path of the stream of off-gas so arranged that some of the elements are in filtering phase while other elements are in blow-back phase for cleaning the elements, a station including means to blow back the filter elements, and means to intermittently skip the filter elements past the blow-back station to alternate the filter elements between filtration and blow back phase according to a predetermined cycle to maintain continuous filtering performance.

4,161,390

CALCINING KETTLE HAVING MULTI-PASS HEATING SYSTEM

John Page, Harvard, and Francis R. Leding, Clarendon Hills, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Jun. 16, 1977, Ser. No. 807,264
Int. Cl.[2] F27D *1/08*; F27B *14/00*
U.S. Cl. 432—102 **12 Claims**



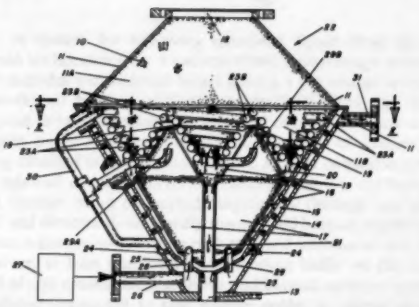
1. A calcining apparatus comprising a calcining kettle of generally cylindrical form having side and bottom walls of heat conductive material and defining a unitary calcining chamber, a jacket surrounding said kettle and spaced therefrom to define an annular heating chamber for containment of a heating medium, at least two vertically oriented baffles arranged between and sealed to said kettle side wall and said jacket dividing said heating chamber into at least two heating chamber members extending along substantially the entire length of said jacket, one an entrance chamber member and the other an inter-pass chamber member, a plurality of substantially tubular first-pass flues horizontally positioned and disposed within said kettle each having one end connected to said entrance chamber and the other end connected to said inter-pass chamber, a plurality of second pass flues horizontally positioned and disposed within said kettle mounted each having one end connected to said inter-pass chamber, and means connected to the other ends of said second pass flues for exhausting the heating medium therefrom.

4,161,391

MELTING APPARATUS

Herbert W. Parker, Chester, Va., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Mar. 14, 1978, Ser. No. 886,704
Int. Cl.[2] F27B *5/14*; E01C *19/45*
U.S. Cl. 432—209 **10 Claims**



4. Apparatus for melting solid particles of synthetic polymer comprising:

(a) an enclosure;
(b) an inlet for introducing said solid particles of synthetic polymer to said enclosure;
(c) an outlet for withdrawal of said synthetic polymer in the molten state from said enclosure;
(d) at least one annular member, supported in the interior of said enclosure in spaced apart relationship therewith;
(e) a heating unit, disposed within said enclosure between said annular member and said inlet, said heating unit having multiple zigzags in cross-section across said enclosure and having small spaces therethrough;
(f) jacket means substantially surrounding said enclosure at and downstream of a point corresponding to said heating unit, and
(g) means for heating said annular member, said heating unit, and said jacket means to above the melt temperature of said solid particles of synthetic polymer.

4,161,392

NITROGEN CONTAINING POLYMERS PREPARED FROM METHACRYLIC ESTERS AS CARBURETOR DETERGENTS AND CORROSION INHIBITORS

Carmen M. Cusano, Poughkeepsie; Isaac D. Rubin, Wappingers Falls; Ronald E. Jones, Glenham, and Paul F. Vartanian, Wappingers Falls, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 1, 1977, Ser. No. 847,643
Int. Cl.[2] C10L *1/22*
U.S. Cl. 44—62 14 Claims

1. A copolymer comprising the olefin polymerization product of:

A. butyl methacrylate

B. a C_8–C_{20} saturated or unsaturated, substituted or unsubstituted, aliphatic or aromatic ester of an unsaturated mono-, di- or polyaliphatic carboxylic acid of chain length C_1 to C_6 in the amount of 5 to 81 percent by weight; and

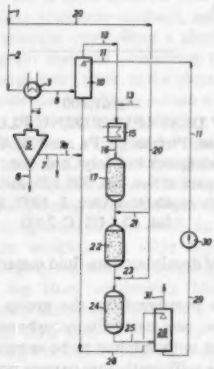
C. an ethylenically unsaturated compound containing a basic nitrogen atom in the side chain selected from the group consisting of dimethyl amino ethyl methacrylic acid and 4-vinyl pyridine.

4,161,393

SHIFT CONVERSION OF RAW GAS FROM GASIFICATION OF COAL

Paul Rudolph, Bad Homburg, and Uwe D. Marwig, Münster, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 1, 1978, Ser. No. 882,483
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1977, 2709768
Int. Cl.[2] C10J *3/00*
U.S. Cl. 48—197 R 10 Claims



1. In a process for producing a fuel gas from a solid fuel which is gasified under a pressure of about 15–100 bars by a treatment with steam and a gas containing free oxygen, cooling the produced raw gas to a temperature of about 150°–200° C. and saturating it with water vapor, removing condensate which has formed so that the resultant raw gas contains hydrocarbons having a boiling range from about 20° to 400° C. in an amount of about 10–100 g per standard m^3 of dry gas and has a $CO:H_2O$ volume ratio of about 0.8–2, and subjecting the raw gas to a shift conversion, the improvement which comprises dividing the raw gas into first and second partial streams in a ratio of about 1:10 to 1:1, feeding the first partial stream with a surplus of water vapor to a first shift conversion stage at an inlet temperature of about 280°–450° C., and passing through at least one subsequent shift conversion stage a mixture of effluent gas from the preceding shift conversion stage and at least part of the second partial stream of raw gas, said second partial stream of raw gas containing the same hydrocarbons as said resultant raw gas, maintaining a pressure of about 15–100 bars in the shift conversion stages, the gas mixture entering each subsequent shift conversion stage being at a temperature of about 300°–500° C. and having a hydrogen content of about 25–35% by volume (related to the moist gas) and a hydrogen partial pressure above 5 bars, and removing fuel gas from the last shift conversion stage.

4,161,394

POLISHING SLURRY OF XANTHAN GUM AND A DISPERSING AGENT

Glen B. Regan, 17370 Skyline Blvd., Woodside, Calif. 94062

Filed Jun. 19, 1978, Ser. No. 916,925
Int. Cl.[2] C09K *3/14*
U.S. Cl. 51—302 4 Claims

1. A solution for use in suspending 0.05–15.0 micron abrasive particles to produce a slurry for use in polishing lenses and semi-conductor wafers comprising water containing in solution from 0.06 to 0.75 percent by weight of xanthan gum and from 0.5 to 5.0 percent by weight of a dispersing agent selected from the group consisting of the condensate of formaldehyde with naphthalene monosulfonic acid, polymethacrylic acid and their ammonium and alkali metal salts.

4,161,395

FOAM AND LIQUOR SEPARATOR

Norris K. Brown, and James W. Foust, both of Salt Lake City, Utah, assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Mar. 20, 1978, Ser. No. 890,644
Int. Cl.[2] B01D *19/02*
U.S. Cl. 55—178 1 Claim

1. A system for removing entrained liquor from the air stream withdrawn from a vacuum filter, comprising a receiver that includes a cylindrical vessel having a top and an inverted cone-shaped bottom portion, a centrally located top outlet adapted to be connected to a source of reduced pressure and a bottom outlet at the apex of said cone, both of said outlets being directed axially of said receiver, an inlet conduit entering the sidewall of said receiver intermediate the top and bottom, said conduit being connected tangentially through said sidewall and directed downwardly toward said bottom whereby to impart a downward swirling path to liquid introduced into said receiver, at least one inwardly extending baffle on the inner wall of said conical section above said bottom outlet, a vertical standpipe connected to said bottom outlet to extend downwardly therefrom, a seal tank below said receiver adapted to receive a mixture of foam and liquor from said vertical standpipe and effect separation of foam from liquid and to retain a

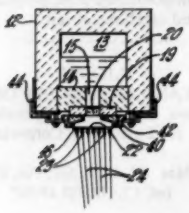
minimal volume of separated liquid therein, the lower end of said vertical standpipe terminating in submergence in said liquid in said seal tank, a second conduit connecting the interior of said tank and said vertical standpipe at a location below said bottom outlet, and pump means for recycling a controlled volume of liquid from said tank into said vertical standpipe at a rate such that the density and weight of liquid in said vertical standpipe is sufficient to seal said bottom outlet of said cone thereby to enable application of vacuum to the interior of said receiver.

4,161,396

METHOD AND APPARATUS FOR PROCESSING HEAT-SOFTENED FIBER-FORMING MATERIAL

Neil E. Greene, Granville; Seshadri Srinivasan, Pickerington, and Leonard A. Stenger, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 17, 1978, Ser. No. 887,705
Int. Cl.[2] C03B *37/02*
U.S. Cl. 65—1 **25 Claims**



1. The method of processing heat-softened mineral material including establishing a body of the material for delivery into a bushing having orifices through which material flows from the bushing, flowing material from the body through an opening in a flow block, thermally isolating the material in the bushing from the body of material by a bushing block, flowing the material from the bushing through the orifices as fine streams, and concomitantly flowing material from the opening in the flow block through a substantially cylindrical passage in the bushing block into the bushing wherein the flow capacity of the passage in the bushing block is substantially equal to but not less than the flow capacity of all of the orifices.

4,161,397

LIQUID COMBINATION SEED TREATMENT COMPOSITIONS

Eugene M. Bellet, Stilwell, Kans., and Madan M. Joshi, Quincy, Ill., assignors to Kalo Laboratories, Inc., Kansas City, Mo.

Filed Aug. 8, 1977, Ser. No. 822,792
Int. Cl.[2] C05F *11/08*
U.S. Cl. 71—7 **15 Claims**

1. A liquid seed treating composition which comprises a fluid suspension of microdried bacteria and a chemical substance toxic to the bacterium in a non-phytotoxic, non-bactericidal oil carrier.

4,161,398

METHOD FOR ELECTROSLAG REMELTING OF A COPPER-NICKEL ALLOY

Joseph W. Tommaney, Sarver, Pa., and Claudia J. Burton, Clinton, N.Y., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed May 8, 1978, Ser. No. 904,166
Int. Cl.[2] C22B *4/06*
U.S. Cl. 75—10 C **8 Claims**

1. A method for the electroslag remelting of a copper-nickel alloy, which method comprises preparing a mixture consisting essentially of from about 35% to about 75% barium fluoride and from about 25% to about 65% calcium fluoride, by weight, fusing said mixture at a temperature within the range of from about 350° F. below the melting point of the alloy to about 100° F. above said melting point to form a flux composition, placing said flux composition in an electroslag remelting mold, inserting said alloy into said flux composition, generating sufficient Joule heat in said flux composition to melt said alloy by passing electric current between said mold and said alloy so that the molten alloy falls through the flux, collecting said molten alloy and cooling it to a temperature below its melting point.

4,161,399

METHOD FOR ELECTROSLAG REMELTING OF A MANGANESE-COPPER-NICKEL ALLOY

Joseph W. Tommaney, Sarver, Pa., and Claudia J. Burton, Clinton, N.Y., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed May 8, 1978, Ser. No. 904,165
Int. Cl.[2] C22B *4/06*
U.S. Cl. 75—10 C **14 Claims**

1. A method for the electroslag remelting of a manganese-copper-nickel alloy, which method comprises preparing a mixture consisting essentially of from about 50% to about 85% barium fluoride and from about 15% to about 50% calcium fluoride, by weight, fusing said mixture at a temperature within the range of from about 100° F. below the melting point of the alloy to about 100° F. above said melting point to form a flux composition, placing said flux composition in an electroslag remelting mold, inserting said alloy into said flux composition, generating sufficient Joule heat in said flux composition to melt said alloy by passing electric current between said mold and said alloy so that the molten alloy falls through the flux, collecting said molten alloy and cooling it to a temperature below its melting point.

4,161,400

METHODS OF DESULPHURIZING FLUID MATERIALS

William G. Wilson, Pittsburgh, Pa., and D. Alan R. Kay, Hamilton, Canada, assignors to MolyCorp, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 705,525, Jul. 15, 1976, Pat. No. 4,084,960. This application Oct. 3, 1977, Ser. No. 838,945
Int. Cl.[2] C21C *7/00*
U.S. Cl. 75—58 **9 Claims**

1. A method of desulphurizing fluid materials comprising the steps of:

(a) reacting a member from the group consisting of rare earth oxides, rare earth fluorocarbonates and rare earth oxyfluorides with sulphur to be removed from the fluid material at a sufficiently low oxygen potential to form one of the group consisting of rare earth sulphides and rare earth oxysulphides and mixtures thereof until a substantial portion of the sulfur has been reached, and

(b) removing said oxysulphides and sulphides.

4,161,401

NICKEL-CALCIUM ALLOY FOR HYDROGEN STORAGE

Gary D. Sandrock, Ringwood, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Division of Ser. No. 739,481, Nov. 8, 1976, Pat. No. 4,096,641. This application Nov. 2, 1977, Ser. No. 847,797
Int. Cl.[2] C22C *19/03*
U.S. Cl. 75—170 **1 Claim**

1. An alloy for the storage of hydrogen at subatmospheric pressures consisting essentially of, in weight percent, about 18.5% Cu, about 10.6% Ca, and the balance essentially nickel.

4,161,402

NICKEL-MISCHMETAL-CALCIUM ALLOYS FOR HYDROGEN STORAGE

Gary D. Sandrock, Ringwood, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Division of Ser. No. 739,483, Nov. 8, 1976, Pat. No. 4,096,639. This application Nov. 2, 1977, Ser. No. 847,695

Int. Cl.[2] C22C *19/03*

U.S. Cl. 75—170 10 Claims

1. An alloy for hydrogen storage consisting essentially of, in weight percent, from about 4% to about 27% mischmetal, from about 2% to about 11% calcium, up to about 17.3% copper, and the balance essentially nickel.

4,161,403

COMPOSITE ELECTRICAL CONTACT MATERIAL OF Ag-ALLOY MATRIX AND INTERNALLY OXIDIZED DISPERSED PHASE

Akira Shibata, Yokohama, Japan, assignor to Chugai Denki Kogyo Kabushiki-Kaisha, Japan

Filed Mar. 22, 1978, Ser. No. 889,097

Int. Cl.[2] C22C *5/06*

U.S. Cl. 75—173 A 4 Claims

1. A composite electircal contact material having dispersed therein alloys of silver and solute metal elements, said alloys including,

a primary alloy comprising a primary silver matrix, and 3 to 11% by weight of tin and 1 to 13% by weight of indium which are in solid solution with said primary silver matrix, and

a subsidiary alloy of a system different from the primary alloy and comprising another silver matrix and one or more metal elements, said elements being of such percentages that they are in solid solution with said other silver matrix, and being internally oxidized, and

said composite material comprising a plurality of said primary silver grain matrices containing the solute metal elements of the primary alloy, and a plurality of said other silver grain matrices containing solute metal elements of the subsidiary alloy and intercoalescing with each other and with said primary silver grain matrices, said solute metal elements having been precipitated in their parental matrices as oxides by internal oxidation of the alloys,

said subsidiary alloy being selected from a group consisting of Ag alloy comprising Sn(3%–11% by weight) and Bi (0.01%–2% by weight), Ag alloy comprising Ca(0.01%–2% by weight), Ag alloy comprising Cd(0.01%–25% by weight), Ag alloy comprising Mn(0.01%–5% by weight), Ag alloy comprising Sb (0.01% –4% by weight), Ag alloy comprising Zn(0.01%–5% by weight), and Ag alloy comprising Pb(0.01%–10% by weight).

4,161,404

PHOTOSENSITIVE MATERIAL FOR USE IN ELECTROPHOTOGRAPHY WITH A POLY ALKYL OR BENZYL GLUTAMATE

Takamichi Enomoto, and Seiiti Sakuma, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1977, Ser. No. 840,276

Claims priority, application Japan, Oct. 13, 1976, 51-122661

Int. Cl.[2] G03G *5/14*

U.S. Cl. 96—1.5 R 11 Claims

1. In a photosensitive material for use in electrophotography comprising an electrically conductive support, a barrier layer on said support and a photosensitive layer on said barrier layer, the improvement which comprises: said barrier layer consists essentially of a polymer selected from the group consisting of film-forming poly-γ-alkyl glutamate and film-forming poly-γ-benzyl glutamate.

4,161,405

METHOD OF CATIONALLY POLYMERIZING OXIRANE FREE MATERIALS WITH GROUP VIA ONIUM SALTS

James V. Crivello, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 638,981, Dec. 9, 1975, Pat. No. 4,058,400, which is a continuation of Ser. No. 466,373, May 2, 1974, abandoned. This application Aug. 5, 1977, Ser. No. 822,150

Int. Cl.[2] G03C *5/00, 1/94, 5/04;* C08J *3/28*

U.S. Cl. 96—35.1 2 Claims

1. A method for cationically polymerizing organic material free of oxirane oxygen consisting essentially of a monomeric or prepolymeric cationically polymerizable organic material free of oxirane oxygen selected from vinyl organic monomers, vinyl organic prepolymers, cyclic organic ethers, cyclic organic esters, cyclic organic sulfides, cyclic amines and organosilicon cyclics which comprises,

(A) forming a mixture of such organic material and an effective amount of an aromatic onium salt of a Group VIa element having the formula,

$$[(R)_a(R^1)_b(R^2)_cX]_d^+[MQ_e]^{-(e-f)},$$

(B) exposing said mixture of (A) to ultraviolet radiation,

where R is a monovalent aromatic organic radical, R^1 is a monovalent organic aliphatic radical selected from alkyl, cyclialkyl and substituted alkyl, R^2 is a polyvalent organic radical forming a heterocyclic or fused ring structure selected from aliphatic radicals and aromatic radicals, X is a Group VIa element selected from sulfur, selenium and tellurium, M is a metal or metalloid, Q is a halogen radical, a is a whole number equal to 0 to 3 inclusive, b is a whole number equal to 0 to 2 inclusive, c is a whole number equal to 0 or 1, where the sum of a+b+c is a value equal to 3 or the valence of X,

d=e−f

f=valence of M and is an integer equal to from 2 to 7 inclusive

e is >f and is an integer having a value up to 8.

4,161,406

SOLUTION AND METHOD FOR PROCESSING HIGH SPEED VIDEO NEWS FILM

David K. Bulloch, Hillsdale, N.J., assignor to Philip A. Hunt Chemical Corp., Palisades Park, N.J.

Filed Dec. 7, 1977, Ser. No. 858,193

Int. Cl.[2] G03C *7/00*

U.S. Cl. 96—55 3 Claims

1. A bath for color development of imagewise exposed VNF high speed color reversal cine film the emulsion of which contains latent silver halide images and which incorporates color couplers, said film having been black and white developed and having thereafter been stopped, the color developing bath concurrently reducing contrast without flashing, which color developer bath includes water, a calcium sequestering agent, an anti-oxidant, a buffer, a restrainer, an alkalizing agent and a color developing agent, that improvement comprising:

(A) the absence of benzyl alcohol from said color developer bath,

(B) the inclusion in said color developer bath of a competing coupler selected from the group consisting of 3–5 g./l. of citrazinic acid and 0.3–0.8 g./l. of 1-amino-8-naphthol-3, 6-disulfonic acid, 6–12 g./l. of the silver halide solvent ethylene diamine, 0–0.015 g./l. of the reversal and contrast control agent t-butylamine borane and 0.05–0.3 g./l. of a competing non-coupling developer selected from the group consisting of 4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidone, phenidone and phenidone derivatives,

(C) the pH of the color developer bath being about 11.7,

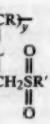
(D) and which film after color development is stopped, bleached and fixed.

4,161,407
CROSSLINKABLE POLYMERS HAVING VINYLSULFONYL GROUPS OR STYRYLSULFONYL GROUPS AND THEIR USE AS HARDENERS FOR GELATIN

Gerald A. Campbell, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 6, 1977, Ser. No. 839,880
Int. Cl.[2] G03C 1/72; C08L 89/00; C08F 28/00; C08G 75/00
U.S. Cl. 96—114 10 Claims

1. A polymer having repeating units having the formula:



where A is a polymerized α,β-ethylenically unsaturated addition polymerizable monomer or a mixture of such polymerizable monomers, x is a molar unit of from 10 to 95, and y is a molar unit of from 5 to 90,

L is a linking group selected from the group consisting of alkylene, arylene, COZ and $COZR^3$,

R^3 is selected from the group consisting of alkylene and arylene,

Z is O or NH,

R is hydrogen or alkyl having 1 to 6 carbon atoms, and R′ is $-CH{=}CHR^2$ or $-CH_2CH_2X$ where X is a leaving group which can be displaced by a nucleophile or can be eliminated in the form of HX upon treatment with base and R^2 is hydrogen, alkyl or aryl.

4,161,408
METHOD FOR THE PREPARATION OF A PHOTOTHERMOGRAPHIC SYSTEM

John M. Winslow, South St. Paul, and Ivan R. Maw, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 6, 1977, Ser. No. 803,549
Int. Cl.[2] G03C 1/02, 1/72
U.S. Cl. 96—114.1 8 Claims

1. A method of forming a photothermographic emulsion which comprises adding light sensitive silver halide grains with agitation to a dispersion of a long chain fatty acid in water, with no alkali or ammonia salt of said acid present in the dispersion while the acid is maintained above its melting point but below its boiling point, then converting the acid to an ammonia salt or alkali metal salt of the acid, then cooling the dispersion, and thereafter converting the alkali metal or ammonia salt to a silver salt of the acid.

4,161,409
CORROSION INHIBITIVE PIGMENT

Louis Schiffman, 1837 Merritt Rd., Abington, Pa. 19001

Filed Mar. 6, 1978, Ser. No. 883,507
Int. Cl.[2] C08K 3/10; C09C 1/34; C09D 5/08
U.S. Cl. 106—14.21 14 Claims

1. The method of preparing a corrosion-inhibiting pigment which comprises reacting a hexavalent chromium compound in aqueous solution with a water soluble oxidizable organic compound containing an active hydroxyl, aldehyde or carbonyl group at a temperature below 95° C. and under conditions to reduce 5 to 70% of the hexavalent chromium compound to lower valent state, evaporating the resulting aqueous reaction product to dryness at a temperature below 150° C., and pulverizing the dried product to pigment size range.

4,161,410
SETTABLE DENTAL COMPOSITIONS WITH POLYTERPENE BINDER

Michael A. Pellico, Los Angeles, Calif., assignor to Denton Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 736,241, Oct. 27, 1976, abandoned. This application May 22, 1978, Ser. No. 908,241
Int. Cl.[2] C09K 3/00
U.S. Cl. 106—35 16 Claims

1. A method for preparing an oral, settable dental composition which comprises interacting:

component A containing:

(i) a polycarboxylic acid selected from the group consisting of C_{36} dimer acid, C_{54} trimer acid and mixtures thereof,

(ii) a reaction rate activator selected from the group consisting of lower aliphatic alcohols, lower aromatic alcohols, lower aliphatic organic acids, calcium, magnesium and zinc salts of said acids, and mixtures thereof, said reaction rate activator being present in an amount from about 1 to about 30 wt.% based on the weight of the polycarboxylic acid, provided however, that the upper weight limit of the lower aliphatic organic acids and the calcium, magnesium and zinc salts of said acids does not exceed about 10 wt.% based on the weight of the polycarboxylic acid, and

(iii) polyterpene resin in an amount from about 0.3 to about 1.3 parts by weight per 1.0 part by weight of polycarboxylic acid; and

component B containing a metallic base selected from the group consisting of oxides and hydroxides of zinc, magnesium, calcium, copper and mixtures thereof, said metallic base being present in an amount from about 0.1 to about 4.0 parts by weight per 1.0 part by weight of polycarboxylic acid.

4,161,411
CEMENT DUST BRIQUETTES AND PROCESS OF PRODUCTION THEREOF

Nancy J. Sell, 3244 Peterson Rd., Green Bay, Wis. 54301, and June E. Doyen, 3240 Old Mill Rd., Northbrook, Ill. 60062

Filed Jun. 16, 1977, Ser. No. 807,161
Int. Cl.[2] C04B 7/40
U.S. Cl. 106—100 15 Claims

1. A process for producing kiln cement dust molded briquettes of high crushing strength and effective for use as a partial feed in cement making processes, comprising the steps of:

(a) applying a mineral oil to the inner surfaces of cavity molds;

(b) substantially filling said cavity molds with kiln cement dust collected from a cement kiln and being essentially free from extraneous binders; and

(c) compacting said kiln cement dust between said mold surfaces under a pressure of at least 20,000 psi to thereby form mineral oil coated kiln cement dust molded briquettes.

4,161,412
METHOD OF HEAT TREATING γ/γ'-α EUTECTIC NICKEL-BASE SUPERALLOY BODY

Michael F. Henry, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

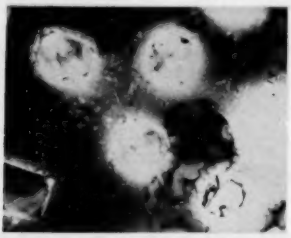
Filed Nov. 25, 1977, Ser. No. 854,975
Int. Cl.[2] C22F 1/10
U.S. Cl. 148—3 15 Claims

1. A method of improving the mechanical properties of a γ/γ'-α eutectic nickel-base superalloy body containing a γ-phase, a γ'-phase, and an aligned molybdenum fiber α-phase which comprises the steps:

(a) heating said body to a temperature at which at least a portion of the γ'-phase will transform to a γ-phase,

(b) maintaining the heated body at said temperature to allow

transformation of at least a portion of said γ'-phase to a γ-phase, and



(c) cooling the transformed body to a temperature at which at least a portion of the γ-phase precipitates as a modified γ'-phase.

4,161,413

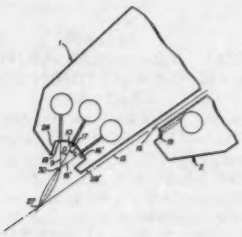
METHOD AND APPARATUS FOR PRODUCING A POST-MIXED, STABILIZED SCARFING PRE-HEATING FLAME

Ronald E. Fuhrhop, West Nyack, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 836,512, Sep. 26, 1977, Pat. No. 4,115,154. This application Jul. 3, 1978, Ser. No. 921,810

Int. Cl.[2] B23K *7/04, 7/08*

U.S. Cl. 148—9.5 **13 Claims**



1. A process for thermochemically scarfing a metal workpiece comprising:

(1) preheating a spot on the surface of the workpiece where the scarfing reaction is to begin by directing a post-mixed preheating flame at said spot, said preheating flame being formed by:

(a) discharging at least one stream of preheat oxidizing gas and at least one stream of preheat fuel gas from separate ports in such a manner that said streams impinge external to their discharge ports, above the work surface and in such manner that the axes of said streams form an acute included angle between them, and

(b) stabilizing said preheating flame by discharging a low-intensity stream of oxidizing gas, the direction of said stabilizing stream being in the same general direction as the direction of said flame and through the impingement of said preheat oxidizing gas and preheat fuel gas streams, and

(c) continuing steps (a) and (b) until said spot reaches its oxidizing gas ignition temperature, and thereafter

(2) directing a stream of scarfing oxidizing gas at an acute angle to the work surface at said preheated spot, while simultaneously

(3) causing relative movement between said scarfing oxidizing gas stream and said work surface, thereby producing a scarfing cut.

4,161,414

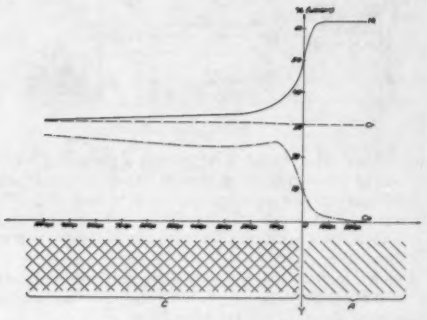
PROCESS FOR FABRICATING FLUID-CONTROL MEMBERS FOR INTERNAL-COMBUSTION ENGINES AND THE LIKE

Robert Saint-Prix, 14 Rue Edouard Petit, St. Etienne (Loire), France

Continuation-in-part of Ser. No. 767,663, Feb. 10, 1977, abandoned. This application Aug. 3, 1978, Ser. No. 930,818

Int. Cl.[2] C22F *1/10*

U.S. Cl. 148—11.5 R **9 Claims**



1. A process for manufacturing a fluid-control member coacting with a seat in a hot, corrosive environment, comprising the steps of:

(a) forming a workpiece from a corrosion-resistant first alloy essentially composed of nonferrous metals including a preponderance of nickel and a lesser proportion of chromium;

(b) applying to a seat-engaging zone of said workpiece a second corrosion-resistant alloy of nonferrous metals containing a predominant proportion of cobalt along with enough chromium to substantially equalize the excess of nickel over chromium in said first alloy, the application of said second alloy to said zone being carried out at a temperature high enough to cause interdiffusion of the constituents of said first and second alloys with resulting formation of a third alloy in said zone containing substantially equal proportions of nickel and chromium on the order of 30% each;

(c) slowly cooling said workpiece;

(d) subjecting the cooled workpiece to a homogenizing heat treatment; and

(e) mechanically working said zone to effect a reduction in the granulometry thereof and a hardening of its structure.

4,161,415

METHOD FOR PROVIDING STRONG WIRE

Jaak S. Van den Sype, Scarsdale, and Lanier Stambaugh, Briarcliff Manor, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 874,326, Feb. 1, 1978, abandoned. This application May 3, 1978, Ser. No. 902,567

Int. Cl.[2] C21D *6/04, 9/52*

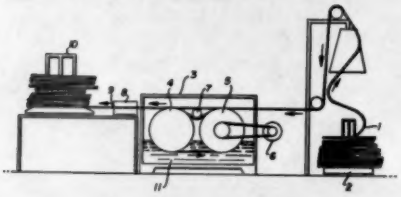
U.S. Cl. 148—12 B **9 Claims**

1. A process for improving the strength characteristics of a wire composed of an austenitic metal alloy selected from the group consisting of stainless steel alloys of the AISI 200 and 300 series and non-stainless steel alloys containing iron, manganese, chromium, and carbon, said alloy having an Md temperature of no higher than about 100° C. and an Ms temperature of no higher than about minus 100° C., comprising the following steps:

(a) deforming the wire at a strain of at least about 10 percent and at a temperature in the range of about Md minus 50° C. to about Md plus 50° C., said Md temperature being

that of the alloy undergoing deformation, in such a manner that the wire has a martensite phase of no greater than about 10 percent by volume and an austenite phase of at least about 90 percent by volume and a yield strength in the range of about 130,000 psi to about 230,000 psi;

(b) cooling the wire to a temperature no higher than about minus 75° C.; and



(c) drawing the cooled wire through a die under back-tension (i) wherein the back-tension on said wire just prior to the entry of the wire into the die is at least about 75,000 psi; and (ii) whereby the cross-sectional area of the wire is reduced by a percentage in the range of about 7 percent to about 25 percent;

in such a manner that the wire has a martensite phase of at least about 50 percent by volume and an austenite phase of at least about 10 percent by volume.

4,161,416

PRODUCTION OF ALUMINUM WIRE

William T. Walton, III, Decatur, Ga., assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Filed May 26, 1978, Ser. No. 909,935
Int. Cl.[2] C22F *1/04*
U.S. Cl. 148—12.7 A **14 Claims**

1. In a process for producing wire from rod of an aluminum alloy having a composition for precipitating at least one constituent upon artificial aging to enhance desired alloy properties, including the step of working the rod into wire with a predetermined extent of area reduction, the improvement which comprises:

(a) performing said working step under conditions for imparting to the wire a finish working temperature in a preselected elevated range, and

(b) passively retarding the rate of temperature decay of the wire from said finish working temperature for a period of time sufficient to effect substantial precipitation of said one constituent,

(c) said elevated range being such that said retarding step, performed on wire that has been worked with said predetermined extent of area reduction, effects artificial aging of the wire.

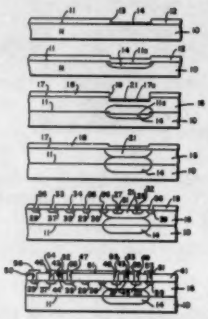
4,161,417

METHOD OF MAKING CMOS STRUCTURE WITH RETARDED ELECTRIC FIELD FOR MINIMUM LATCH-UP

Ernest W. Yim, Sunnyvale, and Paul G. G. VanLoon, San Jose, both of Calif., assignors to Siliconix Corporation, Santa Clara, Calif.

Division of Ser. No. 631,729, Nov. 13, 1975. This application Oct. 17, 1977, Ser. No. 842,683
Int. Cl.[2] H01L *21/225, 21/74*
U.S. Cl. 148—175 **2 Claims**

1. A method of fabricating a CMOS structure which is substantially free of parasitic SCR action notwithstanding the presence of a vertical parasitic transistor formed by the source or drain region of one MOS device, the well in which the source and drain regions are formed and the body of the structure and a lateral parasitic transistor formed by the source or drain region of the other MOS device, the body and the well, said method comprising the steps of: providing a generally planar substrate of the first conductivity type, applying a layer of material of the second conductivity type to a predetermined region of the surface of the substrate, diffusing the material of the second conductivity type into the substrate, forming an epitaxial layer of the first conductivity type on the surface of the substrate, applying material of the second conductivity type to a region of the epitaxial layer overlying the predetermined region of the substrate, heating the substrate to diffuse the material of the second conductivity type until the regions in the substrate and epitaxial layer meet to form an overlapping well and buried layer, forming source and drain regions of the first conductivity type in the well for the one MOS device, and forming source and drain regions of the second conductivity type in the body outside the well for the other MOS device.

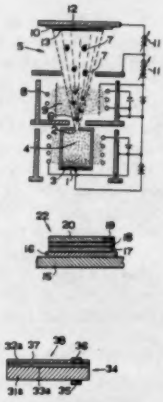


4,161,418

IONIZED-CLUSTER-BEAM DEPOSITION PROCESS FOR FABRICATING P-N JUNCTION SEMICONDUCTOR LAYERS

Kiyoshi Morimoto; Yukihiko Utamura, both of Mobara, and Toshinori Takagi, Nagaokakyo, all of Japan, assignors to Futaba Denshi Kogyo K. K., Chiba, Japan

Division of Ser. No. 695,645, Jun. 14, 1976, abandoned. This application May 23, 1978, Ser. No. 908,748
Claims priority, application Japan, Jun. 27, 1975, 50-079414; Jul. 18, 1975, 50-087257; Nov. 22, 1975, 50-139479
Int. Cl.[2] H01L *21/203;* C23C *15/00*
U.S. Cl. 148—175 **5 Claims**



1. A method of producing a p-n junction type solid-state element comprising the steps of:

providing a substrate made of semiconductor material of a first conductivity type;

evaporating semiconductor material of a second conductivity type to form a vapor;

injecting the vapor into a vacuum region of 10^{-2} Torr at most to form clusters of atoms;

bombarding the clusters with electrons to ionize at least a part of the clusters, thereby forming ionized clusters; and

accelerating the ionized clusters by an electric field to let the ionized clusters collide with the substrate, thereby coating the substrate with a layer of semiconductor material of the second conductivity type to form a p-n junction therewith.

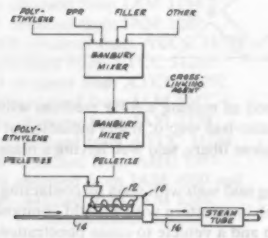
4,161,419
PRODUCTION OF COATED ELECTRICAL CONDUCTOR CABLE

Dominic A. Alia, Williamsport, Pa., assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Continuation of Ser. No. 666,744, Mar. 15, 1976, abandoned. This application Dec. 1, 1977, Ser. No. 856,483

Int. Cl.[2] H01B *13/14*

U.S. Cl. 156—51 **10 Claims**



1. In a method of producing, on electrical conductor cable, a cured, electrically insulating coating of filled polyethylene comprising the steps of,

(a) extruding, from an extruder having a feed screw, onto a conductor cable, a curable coating composition comprising polyethylene and inert particulate filler material and containing at least about 50% by weight polyethylene, and

(b) curing the extruded coating in the presence of a cross-linking agent to produce said cured, electrically insulating coating on the cable,

the improvement which comprises:

admixing, at the extruder screw, at least a major portion of the polyethylene and a pre-established substantially homogeneous mixture of the filler material and an amount of an ethylene propylene rubber, effective to enable substantially homogeneous dispersion of the filler material in the polyethylene by the action of the extruder screw, said rubber having an ethylene content above 50%, the ratio of said filler material to said rubber, in parts by weight, being between about 1:1 and 5:1.

4,161,420
ULTRASONIC METHOD FOR MANUFACTURING BRASSIERE TAPES

Robert A. Clarke, White Plains; Peter J. Kuhl, Jackson Heights, and Richard H. Paschke, Medford, all of N.Y., assignors to Cavitron Corporation, New York, N.Y.

Division of Ser. No. 736,786, Oct. 29, 1976, Pat. No. 4,045,271. This application Jun. 14, 1977, Ser. No. 806,427

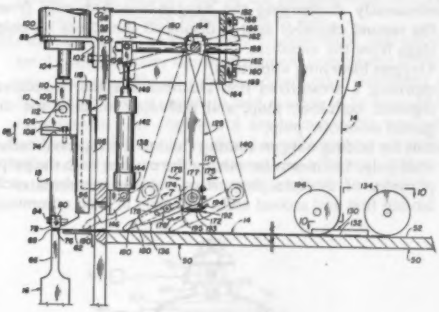
Int. Cl.[2] A41F *1/00*; B29C *27/08*

U.S. Cl. 156—73.3 **25 Claims**

1. The method of fabricating an article from an elongated continuous strip of material formed of flexible layers capable of being ultrasonically welded and having elements longitudinally spaced along an outer one of said layers, said article having a body portion and a pair of overlapping tabs extending therefrom, the method comprising the steps of:

A. interposing between the portion of said layers forming said tabs an insulation element capable of transmitting therethrough ultrasonic vibratory energy for permitting individual layers of material in each of said tabs to be simultaneously welded together, while preventing said tabs from being welded together,

B. retaining in an open position a horn and an anvil for receiving the full width of said strip therebetween, said horn having a forward end engaging one side of said strip and said anvil having a surface opposing and cooperating with said forward end and engaging the opposite side of said strip for simultaneously severing and welding said



strip across the width thereof when brought into operative relationship with each other,

C. advancing said strip between said horn and anvil when in said open position a distance predetermined by the longitudinal space between a selected number of said elements,

D. moving said horn and anvil into said operative position in which they engage said opposite sides of said strip and,

E. vibrating said horn ultrasonically at least when in said operative position for severing and welding together of the layers of said strip transversely across the entire width thereof while said insulation element prevents said tabs from being welded together, whereby the trailing end of one article and the leading end of the next article are formed.

4,161,421
METHOD AND APPARATUS FOR CONTINUOUS OXYGEN BLEACHING OF CELLULOSIC PULP

Michael I. Sherman, Glens Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

Filed Sep. 13, 1977, Ser. No. 832,875

Int. Cl.[2] D21C *7/04, 7/06, 9/10*

U.S. Cl. 162—18 **22 Claims**

1. A method of oxygen-bleaching cellulosic pulp at super atmospheric pressure and temperature utilizing a first pressurized chamber, a plurality of discrete pressurized tubular members disposed in a circle and in fluid communication and physical contact with said first chamber at one end thereof, and a second pressurized chamber, at least some of the hollow members in fluid communication and physical contact with the second chamber at the other ends thereof, the cross-sectional areas of all of the tubular members being less than the cross-sectional area of the first chamber or the second chamber; and a circular plate having at least one aperture formed therein of substantially the same cross-sectional area and shape of each of the tubular members;

intimately mixing oxygen-bearing fluid with digested cellulosic pulp,

continuously feeding the pulp under pressure to the first chamber,

selectively providing communication between the first and second chambers through at least one of the members to allow pulp passage from the first chamber through the member to displace pulp from the member to the second chamber, while blocking passage between others of the members and the second chamber.

progressively changing the at least one member through which pulp passes to the second chamber and the members through which passage is blocked, so that pulp remains within each member sufficient time to allow oxygen-bleaching thereof without degradation, and passes through the members without channelling, by rotating the apertured circular plate to return the at least one aperture in the circular plate to each member to allow plugs of pulp to successively travel through each member as new plugs are introduced into each member, and

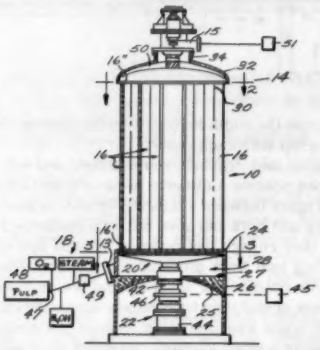
continuously discharging the oxygen-bleached pulp from the second chamber as it is displaced therefrom by pulp slugs from the members.

5. Oxygen bleaching apparatus

comprising a pressurized first chamber adapted to receive digested cellulosic pulp, and including an inlet for digested cellulosic pulp,

means for adding oxygen bearing fluid to the digested cellulosic pulp, and means for mixing the oxygen with the pulp,

a plurlaity of discrete pressurized tubular members each having first and second ends, and each in fluid communi-



cation and physical contact at the first end thereof with the first chamber, and extending therefrom, said members disposed in a circle,

a pressurized second chamber adapted to receive pulp therin, said second chamber being in fluid communication and physical contact with at least some of said members at the second ends therof, said second chamber including an otulet for oxygen bleached pulp,

the cross-sectional areas of all of the tubular members being less than the cross-sectional area of the first chamber or the second chamber,

means distinct from said first chamber inlet for selectively providing passage of digested cellulosic pulp mixed with oxygen through at least one of said members from said at least one member to said second chamber while blocking passage of pulp between others of said plurality of members and said second chamber said passage providing and blocking means comprising a generally circular plate having at least one aperture formed therin of substantially the same cross-sectional area and shape of each of said members, and means for rotating said passage providing and blocking means so that it allows pulp passage from said first chamber through each member in turn to displace pulp from each member in turn to said second chamber, and so that pulp remains within each member sufficient time to allow oxygen-bleaching thereof without degradation, said rotating means returning as at least one aperture in said circular plate to each member to allow plugs of pulp to successively travel through each member as new plugs are introduced into each member.

4,161,422

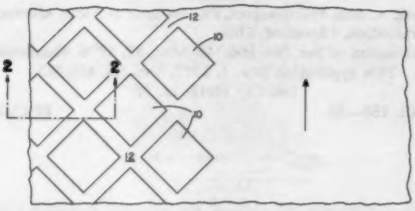
FILTER PAPER AND METHOD OF MAKING SAME

Grover C. Lawson, and James C. Wilson, both of Greenwich, N.Y., assignors to Hollingsworth & Vose Company, East Walpole, Mass.

Division of Ser. No. 813,953, Jul. 8, 1977, Pat. No. 4,119,543, which is a continuation-in-part of Ser. No. 691,420, Jun. 1, 1976, abandoned. This application May 10, 1978, Ser. No. 904,318

Int. Cl.[2] D21F *11/00*

U.S. Cl. 162—135 **7 Claims**



1. The method of making a filter medium which comprises providing a water-laid web of fibers including at least 70% by weight of cellulose fibers, said web having a ream weight of 35 to 180 lb.,

impregnating said web with resin by contacting the wire side of said web in a pattern with a liquid composition containing a resin and a vehicle to cause penetration of said composition into said web to a depth of 15 to 45% of the total thickness of the web, said pattern having first zones free from said resin and other zones impregnated with said resin, at least one surface dimension of each of the first said zones being from 0.1 to 4 mm., the total area of the first said zones being from 35 to 60% of the total surface area of the wire side, and

heating said web to remove said vehicle and leave said resin in an amount from 9 to 15% by weight of the web in said pattern to provide an impregnated web having an air porosity from 1 to 200 CFM per sq. ft. at a pressure drop of 0.5 inch on a Frazier Porosity Tester.

4,161,423

USE OF A DISSOLVED CELLULOSE AS A DRY STRENGTH AGENT AND DRAINAGE AID FOR PAPER

Richard B. Wasser, Norwalk, and John A. Sedlak, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 680,266, Apr. 26, 1976, abandoned. This application Oct. 14, 1977, Ser. No. 842,207

Int. Cl.[2] D21H *3/20, 3/18*

U.S. Cl. 162—163 **9 Claims**

1. A process for providing a cellulosic paper of improved dry strength which comprises forming an aqueous suspension of paper-making cellulosic fibers; adding to said suspension about 0.05 to 1 weight percent based on the dry weight of said fibers of a cellulose dissolved in a solvent selected from the group consisting of paraformaldehyde-dimethylsulfoxide, nitrogen dioxide-dimethyl formamide and cadmium oxide-ethylenediamine so as to provide a precipitated cellulose; maintaining the suspension under agitation until association of the precipitated cellulose and said paper-making cellulosic fibers occurs; forming a web of said paper-making fibers and the associated precipitated cellulose; and drying the resulting web.

4,161,424

NOVEL ENDONUCLEASE AND PROCESS FOR PRODUCTION THEREOF

Tadahiko Ando, Tokyo; Takehiko Shibata; Shukuko Ikawa, both of Wako, and Cholung Kim, Tokyo, all of Japan, assignors to Rikagaku Kenkyusho, Wako, Japan

Filed Jul. 18, 1977, Ser. No. 816,541
Claims priority, application Japan, Jul. 23, 1976, 51-87883
Int. Cl.[2] C07G 7/026; C12D 13/06
U.S. Cl. 435—199 23 Claims

1. Endonuclease capable of selectively recognizing specific nucleic acids and cleaving the phospho-diester bond in the nucleic acids to produce nucleic acid fragments having discrete molecular weight, said enzyme being obtained from a cell-free extract of a species of genus Bacillus, which endonuclease is a member selected from the group consisting of:
(1) R. BsuM obtained from ATCC 6051
(2) R. Bsu6633 obtained from ATCC 6633
(3) R. Bsu1193 obtained from IAM 1193
(4) R. Bsu1231 obtained from IAM 1231
(5) R. Bsu1192 obtained from IAM 1192
(6) R. Bsu1145 obtained from IAM 1145
(7) R. Bsu1076 obtained from IAM 1076
(8) R. Bsu1114 obtained from IAM 1114
(9) R. Bsu1259 obtained from IAM 1259
(10) R. Bce14579 obtained from ATCC 14579
(11) R. BceR obtained from ATCC 31293
(12) R. Bce170 obtained from ATCC 31292
(13) R. Bsu1247 obtained from IAM 1247
(14) R. Bce1229 obtained from IAM 1229
(15) R. Bme205 obtained from ATCC 31294
(16) R. Bpu1387 obtained from AHU 1387
(17) R. Bme899 obtained from IAM 1030 and
(18) R. Bsp1286 obtained from IAM 1286.

4,161,425

ENZYMATIC REAGENT SYSTEM FOR TOTAL CHOLESTEROL ASSAY USING OXYGEN-RATE METHOD

Andrew W. Perry, Anaheim, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 701,919, Jul. 1, 1976, abandoned. This application Mar. 18, 1977, Ser. No. 778,919
Int. Cl.[2] G01N 31/14
U.S. Cl. 435—11 27 Claims

1. A cholesterol assay enzymatic reagent for rate determination of cholesterol in a sample to be assayed of the type comprising cholesterol oxidase, and a buffering agent in an amount to produce a solution having a pH of between about 5.5 and about 8, characterized in that said reagent further comprises means for neutralizing substantially all oxygen consumption inhibiting effects of inhibiting effects present in said sample to be assayed, said means consisting of alkyldimethylbenzylammonium salt in an amount sufficient to neutralize substantially all oxygen consumption inhibiting effects of inhibiting agents present in said sample to be assayed.

8. In a cholesterol assay enzymatic reagent kit capable of being employed for rate determination of cholesterol in a sample to be assayed of the type comprising:
(a) a first reagent comprising:
(i) cholesterol esterase and
(ii) cholesterol oxidase; and
(b) a second reagent comprising:
(i) a buffer solution having a pH of between about 5.5 to about 8;
said reagents adapted to be employed together; the improvement being that said second reagent further comprises means for neutralizing substantially all oxygen consumption inhibiting effects of inhibiting agents present in said sample to be assayed, said means consisting of an alkyldimethylbenzylammonium salt in an amount sufficient to neutralize substantially all oxygen consumption inhibiting effects of inhibiting agents present in said sample to be assayed.

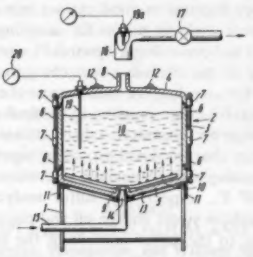
12. In a rate method for determining the cholesterol concentration in a cholesterol containing sample comprising the steps of:
(a) oxidizing the cholesterol present in the sample in an oxygen saturated aqueous solution by means of a cholesterol assay enzymatic reagent of the type comprising:
(i) cholesterol oxidase and;
(ii) a buffering agent in an amount to produce a solution having a pH of between 5.5 and about 8; in the presence of a sensor which serves to monitor a property or characteristic of oxygen in said solution related to the oxygen concentration thereof;
(b) generating a first electrical signal related to said oxygen concentration;
(c) differentiating said first electrical signal to produce an output signal proportional to the instantaneous time rate of change of oxygen concentration; and
(d) measuring said output signal to determine said cholesterol concentration; the improvement comprising neutralizing substantially all oxygen consumption inhibiting effects of inhibiting agents in said sample to be assayed by including in said cholesterol assay enzymatic reagent a cationic surfactant in an amount sufficient to neutralize substantially all oxygen consumption inhibiting effects of inhibiting agents present in said sample to be assayed.

4,161,426

APPARATUS FOR REMOVING GASEOUS IMPURITIES

Franz X. Kneer, Hanau-Mittelbuchen, Fed. Rep. of Germany, assignor to Gebruder Weiss KG, Frohnhausen, Fed. Rep. of Germany

Filed Dec. 17, 1976, Ser. No. 751,945
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1975, 2558256
Int. Cl.[2] C12B 1/00, 1/16
U.S. Cl. 435—313 5 Claims



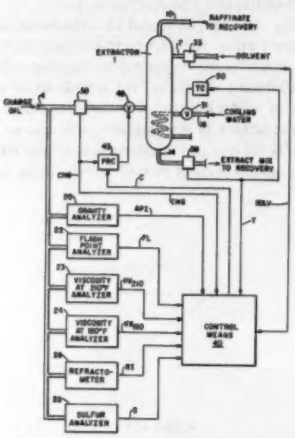
1. An apparatus for removing gaseous organic impurities from waste gases by contacting the waste gas with an absorbent, comprising a closed container having an inlet at its base and an outlet at its top; a supporting stand for receiving and holding said container, said stand having quick disconnect-means adapted for registration and gas-tight connection of said inlet on placement of the container on the stand with a source of waste gas and said container having means in the bottom thereof for distributing the waste gas entering the inlet over the entire area of the container and means for measuring the biological activity of absorbent in the container.

4,161,427

CONTROL SYSTEM FOR A FURFURAL REFINING UNIT RECEIVING MEDIUM SWEET CHARGE OIL

Avilino Sequeira, Jr.; John D. Begnaud, and Frank L. Barger, all of Port Arthur, Tex., assignors to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 851,995, Nov. 16, 1977, abandoned.
This application Jun. 5, 1978, Ser. No. 912,913
Int. Cl.[2] C10G 21/00; C06G 7/58
U.S. Cl. 196—14.52 10 Claims



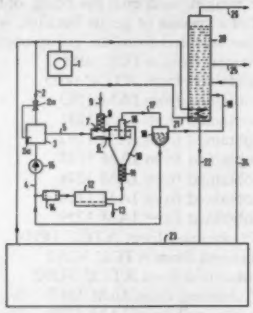
1. A control system for a furfural refining unit receiving medium sweet charge oil and furfural, one of which is maintained at a fixed flow rate while the flow rate of the other is controlled by the control system, treats the received charge oil with the received furfural to yield extract mix and raffinate, comprising gravity analyzer means for sampling the medium sweet charge oil and providing a signal API corresponding to the API gravity of the medium sweet charge oil, flash point analyzer means for sampling the medium sweet charge oil and providing a signal FL corresponding to the flash point temperature of the charge oil, viscosity analyzer means for sampling the medium sweet charge oil and providing signals KV_{150} and KV_{210} corresponding to the kinematic viscosities, corrected to 150° F. and 210° F., respectively, sulfur analyzer means for sampling the medium sweet charge oil and providing a signal S corresponding to the sulfur content of the medium sweet charge oil, a refractometer samples the medium sweet charge oil and provides a signal RI corresponding to the refractive index of the medium sweet charge oil, flow rate sensing means for sensing the flow rates of the medium sweet charge oil and of the furfural and providing signals CHG and SOLV, corresponding to the medium sweet charge oil flow rate and the furfural flow rate, respectively, means for sensing the temperature of the extract mix and providing a corresponding signal T, and control means connected to all of the analyzer means, the refractometer, and to all the sensing means for controlling the other flow rate of the charge oil and the furfural flow rates in accordance with signals API, FL, KV_{150}, S, RI, CHG, T and SOLV.

4,161,428

DEVICE FOR RECOVERING OIL PRODUCTS FROM OIL SANDS

Herbert Gottschlich, Uehlfeld; Christian Koch, Erlangen, and Konrad Künstle, Röttenbach, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Sep. 28, 1977, Ser. No. 837,388
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1976, 2645137
Int. Cl.[2] C10G 1/04; B01D 11/02
U.S. Cl. 196—14.52 4 Claims



1. Apparatus for recovering oil products from oil sands comprising

(a) a separate enclosed pressure vessel for mixing steam and water in the absence of oil sands under high atmospheric pressure,

(b) a first inlet in said enclosed pressure vessel for the introduction of water under high superatmospheric pressure,

(c) a nuclear reactor,

(d) superheated steam under high superatmospheric pressure from said nuclear reactor,

(e) a second inlet in said enclosed pressure vessel for the introduction of said superheated steam under high superatmospheric pressure to heat said water entering said vessel,

(f) a hot water outlet in said pessure vessel for the discharge of heated water,

(g) an elongated tubular reaction chamber having a constriction at a point intermediate its ends,

(h) a hot water conduit for conducting said heated water from said hot water outlet to one end of said elongated tubular reaction chamber, upstream said constriction,

(i) an input screw conveyor extending from an opening at the constriction in said elongated tubular reaction chamber perpendicularly to the axis of said elongated tubular reaction chamber for feeding oil sands from an external source into said reaction chamber in direct contact with said hot water to effect entrainment of the oil sands and release of oil from the sands,

(j) a hydrocyclone for separating solids from liquids, said other end of said elongated tubular reaction chamber extending to and opening into said hydrocyclone for discharge of hot water and reaction products consisting primarily of oil and sand,

(k) an output screw conveyor extending from the bottom of said hydrocyclone for the discharge of sand together with some water separated therein,

(l) an enlarged settling tank for receiving said sand and water from said output screw conveyor to permit said sand to settle at the bottom of the tank with clarified water above the sand,

(m) a water filter connected to the settling tank for the flow of clarified water through the water filter to remove suspended solid matter in the water,

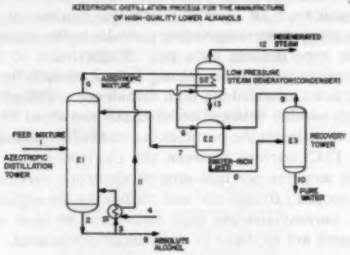
(n) a crude oil separator chamber connected to said hydrocyclone for receiving from said hydrocyclone separated oil together with some water and wherein said oil and water separate in layers in said crude oil separator,
(o) an oil discharge in said separator chamber for the discharge of the oil layer,
(p) a water discharge in said separator chamber for the withdrawal of said water layer, and
(q) a water feed pump for returning said water from said water filter and said water from said crude oil separator under high superatmospheric pressure to said enclosed pressure vessel.

4,161,429

HIGH-PRESSURE AZEOTROPIC DISTILLATION FOR THE MANUFACTURE OF ANHYDROUS ALCOHOLS

James J. Baiel, Morris Plains, and Constantine Tsonopoulos, Parsippany, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 22, 1976, Ser. No. 734,953
Int. Cl.[2] B01D *3/36;* **C07C** *29/28, 31/08, 31/10*
U.S. Cl. 203—18 **7 Claims**



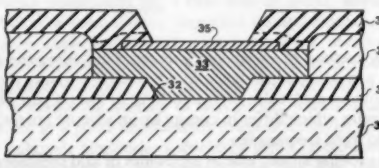
1. A process for the manufacture of a substantially anhydrous C_2–C_5 alcohol from an aqueous mixture thereof by employing a distillation column with the simultaneous generation of a useable steam at the overhead section of the distillation column which comprises conducting the separation of said alcohol from said aqueous mixture in the distillation column at a column pressure ranging from about 50 psig. to about 300 psig. in the presence of cyclohexane and in the presence of oxygen in an amount less than about 6.6 wppm within the distillation column.

4,161,430

METHOD OF FORMING INTEGRATED CIRCUIT METAL INTERCONNECT STRUCTURE EMPLOYING MOLYBDENUM ON ALUMINUM

Marilyn R. Sogo, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 4, 1978, Ser. No. 966,325
Int. Cl.[2] C25D *5/02;* **H01L** *23/48*
U.S. Cl. 204—15 **10 Claims**



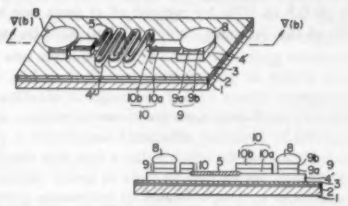
1. A method of forming an interconnect structure on a semiconductor substrate, said method comprising:
depositing an aluminum layer on said substrate;
depositing a layer of molybdenum on said aluminum layer;
forming a photoresist pattern defining an interconnect structure having a width more narrow than the desired width of the interconnect structure;
etching portions of said molybdenum layer exposed by a said photoresist pattern;
removing said photoresist pattern;
depositing a first dielectric layer over said molybdenum pattern with a width greater than the width of said molybdenum pattern so as to completely cover said molybdenum pattern; and
anodizing said exposed aluminum layer to form said interconnect structure.

4,161,431

PROCESS FOR PRODUCING THIN FILM RESISTOR

Takehiko Matsunaga; Saburo Umeda, both of Yokohama, and Tsuneaki Kamei, Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 14, 1977, Ser. No. 860,618
Claims priority, application Japan, Dec. 17, 1976, 51-150951
Int. Cl.[2] C25D *5/02, 11/02;* **H01C** *17/06*
U.S. Cl. 204—15 **10 Claims**



1. A process for producing a thin film resistor, which comprises a first step of forming a tantalum nitride film on an alumina substrate by sputtering, a second step of removing part of the tantalum nitride film formed in the first step by photo etching, thereby forming a pattern, and anodically oxidizing part of the pattern destined to be the resistor, thereby forming a tantalum pentoxide film, a third step of forming a first electrode layer of one metal selected from chromium, titanium, and Nichrome by vacuum vapor deposition on the pattern, so that the tantalum pentoxide formed in the second step is directly connected to a conductor part and the electrode layer is apart from the conductor part, and forming a nickel film as a second electrode layer on the first electrode layer likewise by vacuum vapor deposition, whereby an electrode part is formed apart from said conductor part, a fourth step of heat treating the article obtained in the third step in an atmosphere of a gas selected from argon gas, nitrogen gas and argon-nitrogen gas mixture, and a fifth step of forming a solder bump at the electrode part treated in the fourth step.

4,161,432

ELECTROPLATING CHROMIUM AND ITS ALLOYS

Donald J. Barclay, Winchester, and William M. Morgan, Chandlers Ford, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 913,639, Jun. 8, 1978, which is a continuation-in-part of Ser. No. 833,634, Sep. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 637,483, Dec. 3, 1975, Pat. No. 4,062,737. This application Jun. 8, 1978, Ser. No. 913,973
Claims priority, application United Kingdom, Jun. 14, 1977, 24734/77
Int. Cl.[2] C25D *3/06*
U.S. Cl. 204—51 **32 Claims**

1. In a solution for electroplating chromium in which the source of chromium ions is an aqueous equilibrated solution of

chromium(III) thiocyanate complex, the improvement which comprises,

a buffer material in the solution, which buffer material provides one of the ligands for the complex, said buffer material being selected from the group consisting of amino acids, peptides, formates, acetates and hypophosphites.

4,161,433

DECOMPOSITION OF ALKALI METAL AMALGAMS

Oronzio De Nora, Milan, Italy; Antonio Nidola, and Placido M. Spaziante, both of Lugano, Switzerland, assignors to Oronzio De Nora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Feb. 17, 1978, Ser. No. 878,905

Claims priority, application Italy, Dec. 5, 1977, 30381 A/77

Int. Cl.[2] C25B *1/16;* **C25C** *7/00;* **H01B** *1/04, 1/06*

U.S. Cl. 204—98 **18 Claims**

1. A polyphase packing material for alkali metal mercury amalgam denuders comprising a sintered mixture of at least one powdered valve metal boride and at least one valve metal carbide and also containing at least one member of the group consisting of 0.5 to 10% by weight of at least one metal of group VIII of the Periodic Table and 1 to 30% by weight of graphite.

4,161,434

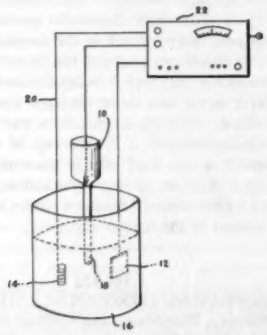
METHOD FOR SEPARATING TRIALUMINUM NICKELIDE FIBERS FROM AN ALUMINUM MATRIX

Kenneth P. Quinlan, Newton, and Joseph J. Hutta, Groton, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 12, 1978, Ser. No. 950,658

Int. Cl.[2] C25F *5/00, 3/00, 3/04*

U.S. Cl. 204—146 **3 Claims**



1. An electrolytic process for separating aluminum nickelide fibers from a solid, two-phased, composite matrix of aluminum and trialuminum nickelide filaments which comprises the steps of passing an electric current between

(A) a cathode composed of an inert material; and

(B) an anode composed of a two-phased composite matrix of aluminum and trialuminum nickelide filaments; while

(C) both anode and cathode are immersed in a one molar solution of potassium hydroxide to effectively remove said aluminum nickelide filaments from said matrix without adversely effecting said nickelide filaments.

4,161,435

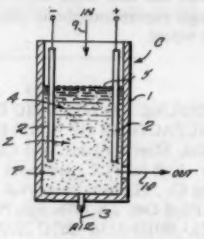
PROCESS AND APPARATUS FOR REDUCING THE LEVEL OF CONTAMINANTS IN AQUEOUS ELECTROLYTES CONTAINING THE SAME

Karl Moeglich, Dunedin, Fla., assignor to Innova, Inc., Clearwater, Fla.

Filed Oct. 13, 1977, Ser. No. 841,925

Int. Cl.[2] C02C *5/12;* **C02B** *1/82*

U.S. Cl. 204—152 **17 Claims**



1. An electrochemical process for reducing the level of contaminants from an aqueous electrolyte containing the contaminants comprising: suspending particles in the electrolyte in a reaction zone defined by a pair of electrodes to obtain a nonfluidized suspension containing from 1 to 40% by volume of the particles, establishing high turbulence corresponding to a Reynolds number between about 10,000 and about 50,000 and sufficient to maintain the particles in a state of violent agitation, applying D.C. current between the electrodes at a current density in amperes per unit area of electrode surface which does not exceed 1.0 amp/cm^2 and continuing the application of the D.C. current and the high turbulence at least until the contaminants are oxidized or reduced or coagulated.

4,161,436

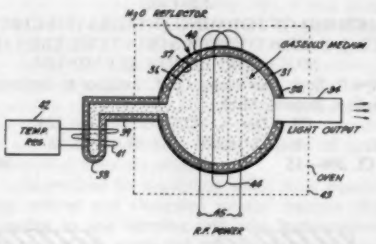
METHOD OF ENERGIZING A MATERIAL

Gordon Gould, 1200 N. Nash Ave., Arlington, Va. 22209

Division of Ser. No. 498,065, Aug. 16, 1974, Pat. No. 4,053,845, which is a continuation of Ser. No. 644,035, Mar. 6, 1967, abandoned, and Ser. No. 804,540, Apr. 6, 1959, abandoned, said Ser. No. 644,035 is a division of said Ser. No. 804,540, and a continuation-in-part of Ser. No. 804,539, Apr. 6, 1959, abandoned. This application Oct. 6, 1977, Ser. No. 840,050

Int. Cl.[2] B01J *1/10*

U.S. Cl. 204—157.1 R **3 Claims**



1. A method of energizing a material including the steps of:

(a) providing a substance in a bounded volume, the atoms, ions or molecules of which have at least a pair of energy states which differ in energy by an amount corresponding to light frequencies;

(b) exciting atoms, ions or molecules of said substance within said bounded volume to produce a greater population of atoms, ions or molecules of said substance in a higher of said energy states;

(c) directing substantially collimated stimulating light along

a path through said bounded volume which enables the stimulating light to selectively stimulate emission of substantially collimated light; and

(d) shining said emitted substantially collimated light onto said material which includes a mixture of reactable chemicals whereby said emitted substantially collimated light promotes reaction between said chemicals.

4,161,437

MEASURING PROBE FOR THE POLAROGRAPHIC DETERMINATION OF PARTIAL GAS PRESSURES

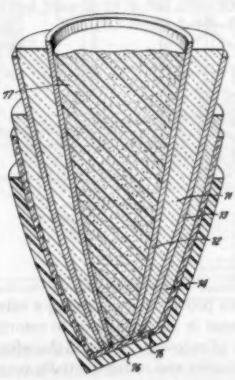
Wolfgang Fleckenstein, Kiel, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 648,944. This application Nov. 21, 1977, Ser. No. 853,582

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1975, 2501399

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—195 P 4 Claims



1. In a measuring probe for polarographic determination of partial gas pressures, particularly partial pressures of oxygen in aqueous solutions, particularly in biological media, of the type having an indicator electrode which, except for a very small effective surface, is insulated all around, and a diaphragm protecting the effective surface against poisoning, and which probe has a reference electrode, the improvement comprising, in combination, insulating support means; said indicator electrode being constituted by a thin film of metal, having the properties of a noble metal, deposited on said insulating support means; a thin film insulating layer deposited on and covering said indicator electrode film; said effective surface being an exposed edge surface of said indicator electrode film forming part of a measuring surface of said probe, which measuring surface lies in a plane substantially perpendicular to the plane of said indicator electrode; a shielding layer, in the form of a thin film deposited on and covering the thin film insulating layer which insulates said indicator electrode; said shielding layer extending to at least adjacent said measuring surface; and means insulating said shielding layer from the exterior of said probe and from said measuring surface.

4,161,438

ELECTROLYSIS CELL

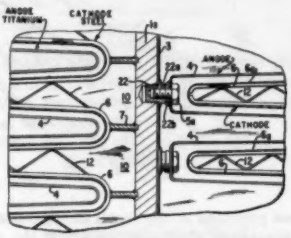
Oronzio De Nora, Milan, Italy, and Vittorio De Nora, Nassau, The Bahamas, assignors to Oronzio De Nora Impianti Elettrochimici S.p.A., Milan, Italy

Continuation of Ser. No. 571,378, Apr. 24, 1975, and a continuation of Ser. No. 51,162, Jun. 30, 1970, U.S. Pat. No. 3,930,980

Claims priority, application Italy, Apr. 23, 1970, 23757 A/70

Int. Cl.[2] C25B *11/03, 11/10, 13/00*

U.S. Cl. 204—266 1 Claim



1. In a bipolar electrolysis cell, a positive end unit containing anodes and cathodes, a negative end unit containing anodes and cathodes and a plurality of intermediate units containing anodes and cathodes, all of said units being substantially rectangular and each of said units having an anode compartment and a cathode compartment, said anode compartments and cathode compartments being separated from the adjacent cell units by a continuous bimetallic partition of ferrous metal on the cathode side and a valve metal on the anode side, a corrosion resistant lining in each of said anode compartments, said units being connected in series to pass an electrolysis current through all of said cell units, the anode being constructed of a valve metal in the form of open mesh hollow finger-like waves having an electrocatalytic coating thereon and the cathodes being constructed of ferrous metal in the form of hollow finger-like waves which are nested together, means to permit anodic gases rising through the electrolyte to escape from the electrolyte from both the front and back of the anodes and from the top of each cell unit, the cathodes of one cell unit being connected back to back to the anodes of the adjacent cell unit by a metal to metal contact between the valve metal anodes and the ferrous metal cathodes through said bimetallic partitions, in which the ferrous metal and the valve metal forming said bimetallic partitions are connected through an intermediate metal from the group consisting of copper and lead.

4,161,439

APPARATUS FOR APPLICATION OF ELECTROSTATIC FIELDS TO MIXING AND SEPARATING FLUIDS

Kenneth W. Warren, and Floyd L. Prestridge, both of Tulsa, Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 3, 1978, Ser. No. 892,612

Int. Cl.[2] B03C *5/00, 5/02*

U.S. Cl. 204—306 4 Claims

1. Apparatus for mixing a plurality of fluids and subsequently separating the fluids, including,

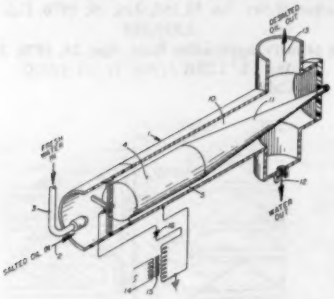
a vessel,

inlets to the vessel for a plurality of fluids to be mixed and subsequently separated,

a common flow path in the vessel for the fluids to be mixed and subsequently separated,

first means electrically energized as electrodes to generate an electrostatic field in the flow path of an intensity which will move drops of the more polar of the fluids fast enough to be sheared by the other fluids into smaller sizes which will distribute throughout the less polar of the fluids in a mixing operation,

second means electrically energized as electrodes to generate an electrostatic field in the flow path downstream of the first field and of an intensity which will move the drops of the dispersed fluid into collision with each other and coalesce into sizes large enough to gravitate from the remaining fluid,



a volume provided in the vessel downstream of the mixing and separating electrodes in which the coalesced fluid separates from the remaining fluid,

and outlet conduits connected to the vessel to withdraw the separated fluids.

4,161,440

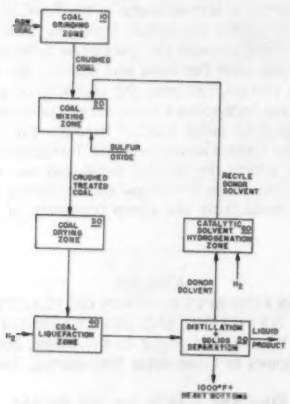
LIQUEFACTION OF CALCIUM-CONTAINING SUBBITUMINOUS COALS AND COALS OF LOWER RANK

Roy J. Brunson, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 21, 1977, Ser. No. 853,301

Int. Cl.[2] C10G *1/00, 1/06*

U.S. Cl. 208—8 R **12 Claims**



1. A process for liquefying a calcium-containing subbituminous coal and coals of lower rank comprising:

(a) contacting said coal with a sulfur oxide, maintained in the liquid phase, to form within the pores of said coal a water-insoluble, thermally stable calcium compound; and

(b) liquefying the treated coal at a temperature within the range from about 700° F. to about 950° F. and at a pressure within the range from about 300 psia to about 3000 psia.

5. The process of claim **1** wherein the sulfur oxide is dissolved in a solvent, and maintained under pressure.

9. The process of claim **1** wherein the liquefaction is accomplished in the presence of a solvent which comprises a hydrogen-donor compound.

12. The process of claim **9** wherein the coal is initially contacted with a first solvent which contains sulfur oxide, the coal is thereafter dried, and then contacted and liquified with a second solvent indigenous to the process.

4,161,441

PROCESS FOR THE PRODUCTION OF DISTILLATE FUELS FROM OIL SHALES AND BY-PRODUCT THEREFROM

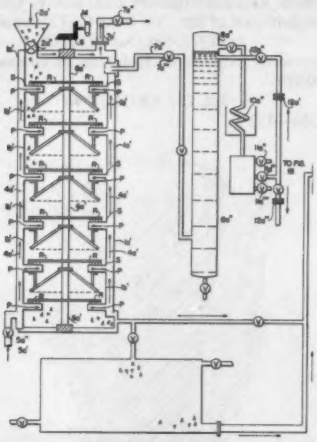
Jacque C. Morrell, 4501 Conn. Ave. NW., Washington, D.C. 20008

Continuation of Ser. No. 679,315, Apr. 23, 1976, abandoned. This application Oct. 31, 1977, Ser. No. 847,832

The portion of the term of this patent subsequent to May 4, 1993, has been disclaimed.

Int. Cl.[2] C10G *1/02*

U.S. Cl. 208—11 R **4 Claims**



1. A continuous process for removing a substantial amount of the water present in oil shale prior to retorting the same to facilitate the rate of recovery of the oil therefrom in the retorting step of the process and to substantially increase the capacity of the retorting step in the process and improve the overall efficiency thereof; which comprises subjecting the said oil shale in subdivided form to indirect heat treatment in a partial dehydration step conducted at a temperature of up to 650° F., said partial dehydration step being conducted by passing said oil shale into a vertical retort equipped with hollow shelves opening into said vertical retort through which hollow shelves hot combustion gases are passed to partially dehydrate said oil shale, moving said oil shale progressively downward onto and over said shelves wherein it is indirectly heated by said hot gases passing there through, said partial dehydration being conducted for a sufficient time to remove substantial to major amounts of free and combined water from the oil shale and considerable amounts of oil distillate and thereafter passing the heated partially dehydrated oil shale to a retorting step for further heat treatment at a temperature of about 850° F. to about 1,000° F., fractionating the vapors from the retorting step wherein there is removed a light overhead product comprising vapors of low boiling hydrocarbons, water, hydrocarbon gases and ammonia and wherein heavier conversion oil product from the oil shale are condensed and separated as a liquid for further treatment and use.

4,161,442

PROCESSING OF TAR SANDS

Costandi A. Audeh, Princeton, and Nai Y. Chen, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 5, 1978, Ser. No. 867,061
Int. Cl.[2] C10G *1/00;* C10J *3/06*
U.S. Cl. 208—11 R 12 Claims

1. A method for upgrading tar sands which comprises:

mixing the equivalent of 1 part of tar sands with up to about 5 parts of spent hot sand obtained as defined below to form a mixture therein in a distillation zone at a temperature within the range of 600° to 850° F.,

stripping petroliferous material from said hot mixture in said distillation zone with steam under conditions avoiding significant cracking to produce an oil distillate product,

recovering said oil distillate product,

passing sand particles comprising hydrocarbonaceous deposits obtained from said distillation zone to a fuel gas generation zone,

contacting said sand particles comprising hydrocarbonaceous deposits in said fuel gas generation zone with a mixture of steam and oxygen containing gas at a temperature within the range of 1500° to 2200° F. and recovering a fuel gas product therefrom, and

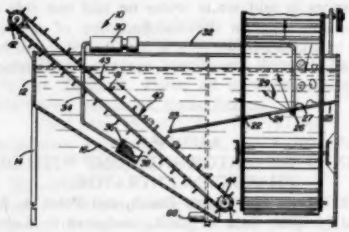
passing hot sand particles recovered from said fuel gas generation zone at an elevated temperature to said distillation zone for admixture with tar sands as above identified.

4,161,443

POTATO AND ROCK SORTER

Tony L. Glover, R.R. 1, Tigerton, Wis. 54486

Filed May 2, 1978, Ser. No. 902,090
Int. Cl.[2] B03B *5/66*
U.S. Cl. 209—157 3 Claims



1. An apparatus for separating heavier components from lighter components mixed therewith comprising:

container means having a liquid disposed therein, said liquid having a surface disposed at a predetermined height within said container means;

mixed component delivery means having a discharge end spaced above said liquid surface for depositing mixed components into said liquid;

baffle means disposed below said liquid surface, said baffle means having a receiving end disposed vertically below said discharge end for receiving said mixed components after they have been deposited by said delivery means and fallen through said liquid, said baffle means being substantially planar and being positioned within said container means inclining downwardly from said receiving end to a lower end, the mixed components moving downwardly along said baffle means incline;

an aperture formed in said baffle means and spaced from said receiving end along said incline for allowing the heavier mixed components to fall therethrough under the influence of gravity after having moved downwardly from said receiving end;

nozzle means disposed below said aperture for causing an upward flow of liquid through said aperture to deflect the lighter components away from said aperture thereby allowing only the heavier components to fall through said aperture;

pump means connected to said nozzle means for providing a continuous pressurized supply of liquid to said nozzle means;

first conveyor means having one end thereof disposed vertically below said aperture for receiving said heavier components and removing them from the body of liquid; and

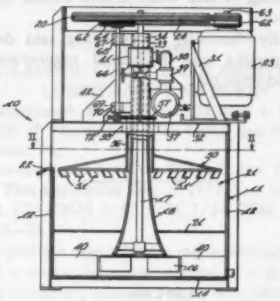
second conveyor means having one end thereof disposed vertically below said lower end of said baffle means for receiving said lighter components and removing them from said liquid.

4,161,444

MECHANICAL MEANS FOR INCREASING THE GRADE OF A FLOTATION CELL CONCENTRATE

Donald C. Moore, New Berlin, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 25, 1977, Ser. No. 854,900
Int. Cl.[2] B03D *1/20*
U.S. Cl. 209—169 1 Claim



1. In a flotation cell for treating coal slurry which contains unwanted refuse particles:

a tank in which the coal slurry is contained;

air supply means arranged to deliver air to the bottom of the tank to infuse fine air bubbles into the slurry;

a power driven agitating means carried by the tank and operatively arranged to disperse the fine air bubbles through the slurry; and,

a mechanical power driven froth agitator carried by the tank, said froth agitator comprising a rake having a plurality of spaced-apart depending teeth which are disposed radially with respect to the axis of rotation of the rake and at an angle with respect to a horizontal line that passes through the axis about which the rake rotates, said teeth slanting inwardly towards the axis of rake rotation, said rake being disposed in position to impart a rolling mechanical motion to the froth layer so that the froth is rolled back into the low solid pulp below the froth layer so as to dislodge unwanted refuse particles mechanically trapped between air bubbles.

4,161,445

PROCESS FOR THE DESALINATION OF SALT CONTAINING WATER

Dudley W. Coillet, 12 Ross Rd., Belmont, Mass. 02178

Filed Nov. 23, 1977, Ser. No. 854,405
Int. Cl.[2] B01D *13/00*
U.S. Cl. 210—23 H 3 Claims

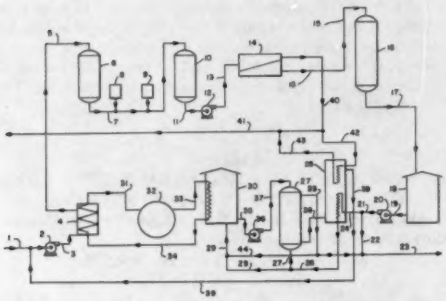
1. A process for forming potable water from a salt-containing water source comprising the steps of

(a) passing water from said water source in a stream through a heat exchange zone, wherein it is cooled,

(b) passing said cooled water stream through a reverse osmosis membrane zone to form a permeate water stream,

(c) passing said permeate stream through a thermal ion exchange desalination resin bed to form a potable water stream,

(d) preheating a regenerant water stream by heat generated



during cooling of said water source stream in said heat exchange zone, and

(e) periodically thermally regenerating said desalination resin by passing said preheated regenerated stream through said resin bed.

4,161,446

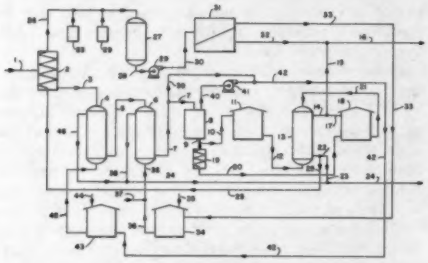
PROCESS FOR THE TREATMENT OF GROUND WATER

Dudley W. Coillet, 12 Ross Rd., Belmont, Mass. 02178

Filed Nov. 23, 1977, Ser. No. 854,406

Int. Cl.[2] B01D *13/00*

U.S. Cl. 210—23 H **3 Claims**



1. A process for forming potable water from a salt-containing water source comprising the steps of

(a) passing water from said water source as a stream through a bed of thermal ion exchange desalination resin to form a potable water stream,

(b) periodically thermally regenerating said desalination resin by passing a preheated regenerant stream of higher temperature than said water source through said resin bed,

(c) passing said water source stream prior to step (a) and the regenerant water stream resultant from step (b) through a heat exchange zone in which said regenerant water stream is cooled and said water source is heated, and

(d) passing said cooled regenerant water stream through a reverse osmosis membrane zone to form a permeate for use as potable water.

4,161,447

PROCESS FOR TREATING WASTE WATER CONTAINING RADIOACTIVE SUBSTANCES

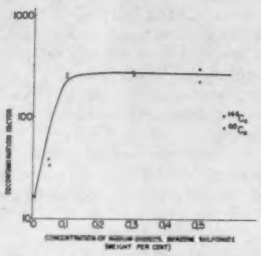
Katumi Kojima, Ohimachi, Japan, assignor to Daicel Ltd., Osaka and Mitsui Shipbuilding & Engineering Co., Ltd., Tokyo, both of, Japan

Filed Nov. 18, 1974, Ser. No. 524,976

Claims priority, application Japan, Jun. 13, 1974, 49-67520

Int. Cl.[2] B01D *13/00*

U.S. Cl. 210—23 H **8 Claims**



1. In a reverse osmosis process for purifying waste water from atomic energy installations containing radioactive substances, in which the waste water is flowed under pressure in contact with a semipermeable membrane and the radioactive substances are preferentially retained on one side of the membrane and purified water is recovered from the other side of the membrane, the improvement which comprises said waste water flowed past said membrane contains from 0.1 to 1.0 weight percent of at least one water-soluble organic surfactant effective to retain more than about 99 percent of the radioactive substances in said waste water on said one side of said membrane, and wherein the concentration of said organic surfactant in said waste water is at least twice as much as the critical concentration of micelle formation of said surfactant in said waste water.

4,161,448

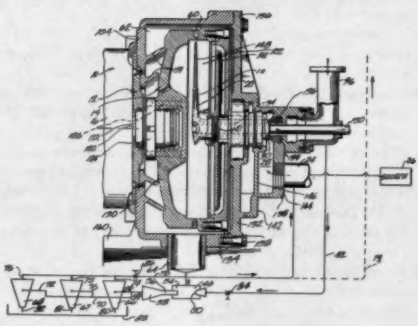
COMBINED SEPARATOR AND PUMP WITH DIRTY PHASE CONCENTRATOR

John W. Erickson, Huntington Beach, and Peter A. Soriano, Rowland Heights, both of Calif., assignors to Kobe, Inc., Huntington Park, Calif.

Filed Feb. 21, 1978, Ser. No. 879,811

Int. Cl.[2] B01D *43/00*

U.S. Cl. 210—258 **15 Claims**



1. An improvement in the means for separating waste from a dirty fluid to generate a cleansed fluid stream, the improvement comprising:

(a) centrifugal separator means for separating waste from a

dirty fluid stream by centrifugal force and creating separated waste in a fluid carrier and a first cleansed fluid stream;

(b) at least one secondary separator;

(c) means communicating the separated waste and fluid carrier from the centrifugal separator to the secondary separator for the concentration of the waste and the formation by the secondary separator of a second cleansed fluid stream from the fluid carrier and a waste stream;

(d) means using at least a portion of the first cleansed fluid and at least a portion of the head imparted to such first cleansed fluid by the centrifugal separator means to pump the separated solid waste and fluid carrier to the secondary separator through the communicating means; and

(e) means for receiving the waste stream.

4,161,449

POWDERED CARPET COMPOSITION

James A. Smith, Old Tappan, N.J., and James H. McLaughlin, Chatham, Mass., assignors to Airwick Industries, Inc., Carlstadt, N.J.

Filed Sep. 2, 1977, Ser. No. 830,238

Int. Cl.[2] D06M *11/04*

U.S. Cl. 252—8.6 **10 Claims**

1. A powdered carpet-treating composition comprising a blend of from about 40.0–98.99%, by weight, of an inorganic salt carrier selected from the group consisting of sulfates, chlorides, carbonates, bicarbonates, borates, citrates, phosphates, nitrates and blends thereof, substantially all of the particles of said carrier being between 0.06–0.25 millimeters; from about 1.0–25.0%, by weight, of an agglomerating agent selected from the group consisting of starch, silica powders, grain flour, wood flours, talc, pumice, clays and calcium phosphate; from about 0.01–20.0%, by weight, of a volatile odorous agent and up to about 15%, by weight, of an antistatic agent.

4,161,450

DRYING COMPOSITIONS

Jean-Claude Vitat, Antony; Jean-Pierre Rémond, Massy, and Jean-Robert Thebault, Paris, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Mar. 15, 1977, Ser. No. 777,849

Claims priority, application France, Jun. 4, 1976, 76 16961

Int. Cl.[2] C09K *3/00*

U.S. Cl. 252—194 **6 Claims**

1. A composition comprising from 90 to 99.95% by weight of an organic solvent containing at least 50% by weight of 1,1,2-trichloro-1,2,2-trifluoro-ethane, 0.04% to 8% by weight of a hydrophobic surface active agent substantially insoluble in water, and 0.01% to 2% by weight of an organic acid which voids the formation of stable emulsions, said acid being selected from the group consisting of saturated aliphatic mono- or diacids having a C_5–C_{10} chain and which are linear, branched or cyclic and substituted or unsubstituted; aliphatic unsaturated mono- or diacids which have a C_5–C_{30} chain and are linear or branched and substituted or unsubstituted; and aromatic acids having a C_7–C_9 saturated or unsaturated chain, which are unsubstituted or mono- or polysubstituted by at least one amino, nitro, hydroxy or methoxy group.

4,161,451

LUBRICATING OIL ADDITIVE COMPOSITION

Warren Lowe, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 672,805. This application Mar. 27, 1978, Ser. No. 890,879

The portion of the term of this patent subsequent to Jul. 25, 1995, has been disclaimed.

Int. Cl.[2] C10M *1/48, 3/42, 5/24, 7/46*

U.S. Cl. 252—32.7 E **14 Claims**

1. An additive composition for use in crankcase lubricating oils comprising:

(1) an oil-soluble antioxidant selected from aromatic and alkyl sulfides and polysulfides, sulfurized olefins, sulfurized carboxylic acid esters, and sulfurized ester-olefins, and

(2) an oil-soluble secondary amine of the formula:

$$\begin{array}{c} H \\ | \\ R-N-R' \end{array}$$

wherein R and R′ are aliphatic radicals.

2. The composition of claim 1 wherein the weight ratio of the antioxidant to the secondary amine is 1:0.001-21, and R and R′ each contain from 6 to 30 carbon atoms.

4. A lubricating oil composition comprising a major amount an oil of lubricating viscosity and an antioxidant amount of the composition of claim 2.

5. The composition of claim 4 comprising an oil of lubricating viscosity, from 0.25 to 10% weight of said antioxidant, and from 0.001 to 5% weight of said secondary amine.

6. The composition of claim 5 which contains an antioxidant-antiwear amount of an oil-soluble zinc dihydrocarbyldithiophosphate salt, and wherein the antioxidant is a wax sulfide or polysulfide.

4,161,452

POLYOLEFINIC COPOLYMER ADDITIVES FOR LUBRICANTS AND FUELS

Robert L. Stambaugh, Hatboro, and Richard A. Galluccio, Perkasie, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 763,756, Jan. 28, 1977, abandoned. This application Dec. 5, 1977, Ser. No. 857,078

Int. Cl.[2] C10M *1/32, 3/26, 1/24; C08L 23/00*

U.S. Cl. 252—34 **24 Claims**

1. A composition comprising a major amount of a lubricating oil and a minor detergent amount of a graft copolymer prepared by intimately admixing (a) an oil soluble, substantially linear, substantially saturated, rubbery, olefinic hydrocarbon backbone polymer, (b) an addition copolymerizable graft monomer system comprising an unsaturated polycarboxylic acid or anhydride and at least one other monomer copolymerizable therewith, and (c) a free radical initiator capable of hydrogen abstraction, the temperature during admixing in the presence of the initiator being below the decomposition temperature of the initiator, and thereafter increasing the temperature of the mixture to or above the decomposition temperature of the initiator.

6. A composition as in claim 1 wherein the graft copolymer is post-reacted with an alcohol or amino alcohol.

4,161,453

ELECTROPHORETIC DEVELOPERS

Yvan K. Gilliams, Hever, and Noel J. De Volder, Edegem, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Jul. 20, 1977, Ser. No. 817,264

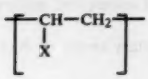
Claims priority, application United Kingdom, Jul. 23, 1976, 30920/76

Int. Cl.[2] G03G *9/12*

U.S. Cl. 252—62.1 L **13 Claims**

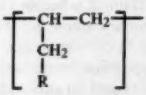
1. A liquid developer composition suitable for use in developing electrostatic charge patterns, which composition contains in an electrically insulating non-polar carrier liquid a dispersed particulate colouring substance, one or more charge control substances, a copolymer (I) pre-coating for said colouring substance particles in a weight ratio of copolymer (I) to colouring substance wherein 1:1 and 9:1 and a copolymer (II) in said carrier liquid in a weight ratio of copolymer (II) to colouring substance between 0.5:1 and 5:1,

said copolymer (I) being a copolymer consisting of 50 to 90 mole % of recurring units of the following formula (A)



(A)

wherein X is phenyl or alkylphenyl, and from 10 to 50 mole % of recurring units of the following formula (B)



(B)

wherein R is a hydroxyl group or is a group resulting from the esterification of hydroxyl with a C_{12}–C_{20} aliphatic acid with the proviso that the copolymer (I) contains at least 0.5% by weight of free hydroxyl groups, and

said copolymer (II) being a copolymer selected from the group consisting of

a copolymer of at least one C_{12}–C_{20} alkyl ester of methacrylic acid (X) and the n-butyl or isobutyl ester of methacrylic acid (Y)

a copolymer of X, Y and up to 70% by weight of styrene or a styrene homologue, and

a copolymer of X, Y and up to 0.4% by weight of methacrylic acid,

the weight ratio of X to Y in these copolymers being comprised between 15:85 and 50:50.

4,161,454

COATING MAGNETITE WITH POLYACID

Chin H. Lu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 2, 1977, Ser. No. 802,604

Int. Cl.[2] G03G *9/08*; B32B *5/16*, *15/08*

U.S. Cl. 252—62.1 P **17 Claims**

8. A method of toner formation comprising forming an aqueous dispersion of magnetic particles in a solution of a water soluble salt of a polyanhydride in water, converting the soluble salt of the polyanhydride to the polyacid by adding acid to said aqueous dispersion to precipitate the polyacid onto said magnetic particles, separating the coated magnetic particles from the aqueous dispersion, mixing said coated particles into a solution of a solvent and resin to form a slurry and spray drying said slurry to form toner.

4,161,455

NOVEL PRECIPITATED SILICEOUS PRODUCTS AND METHODS FOR THEIR USE AND PRODUCTION

Satish K. Wason, Havre de Grace, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Continuation of Ser. No. 796,913, is a division of Ser. No. 557,707, Mar. 12, 1975, abandoned. This application May 30, 1978, Ser. No. 911,003

Int. Cl.[2] C11D *3/08*

U.S. Cl. 252—174.25 **1 Claim**

1. A detergent composition, including as an agent to improve flow properties, a finely divided, amorphous, precipitated silicon dioxide having:

(a) a wet cake moisture content of from between about 77.9 to 83.5% where it is about 77.9 to 83.2% in the presence of a metal cation and between about 79.8 to 83.5% in the absence of said metal cation;

(b) a structure index of from between about 350 to 505 where it is between about 350 to 495 in the presence of said metal cation and between about 395 to 505 in the absence of said metal cation;

(c) an oil absorption of from between about 190 to 212 cc/100 grams where it is between about 193 to 212 cc/100 grams in the presence of said metal cation and between about 190 to 202 cc/100 grams in the absence of said metal cation;

(d) a void volume of from between about 3.19 to 4.44 cc Hg/g SiO_2 where it is between about 3.19 to 4.44 cc Hg/g SiO_2 in the presence of said metal cation and between about 3.55 to 4.14 cc Hg/g SiO_2 in the absence of said metal cation;

(e) a BET surface area of from between about 120 to 220 m^2/g where it is between about 153 to 220 m^2/g in the presence of said metal cation and between about 120 to 153 m^2/g in the absence of said metal cation; and

(f) a percent friability of from between about 20 to 98% where it is between about 28 to 93% in the presence of said metal cation and between about 20 to 98% in the absence of said metal cation;

wherein said silicon dioxide comprises at least 90% SiO_2 and said metal cation is selected from the group consisting of aluminum, magnesium, zinc and calcium.

4,161,456

BASE MATERIAL FOR ARTIFICIAL LEATHER

Gustav Sinn, Leverkusen; Martin Matner, Odenthal, and Hermann J. Bross, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 822,000, Aug. 5, 1977, which is a continuation of Ser. No. 650,532, Jan. 19, 1976, abandoned. This application Feb. 24, 1978, Ser. No. 880,899

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1975, 2502654; Jan. 23, 1975, 2502644

Int. Cl.[2] B32B *7/14*

U.S. Cl. 252—182 **1 Claim**

1. A vulcanization paste comprising 0.5 to 10.0 parts by weight of zinc oxide, 0.2 to 10.0 parts by weight of sulphur, 0.2 to 3.0 parts by weight of a water soluble accelerator, 0.2 to 3.0 parts by weight of a water insoluble accelerator, 2.0 to 15.0 parts by weight of titanium dioxide, 0.1 to 5.0 parts by weight of a dispersing agent and 10.0 to 50.0 parts by weight of water.

4,161,457

PROCESS FOR PREPARING A DIVALENT EUROPIUM ACTIVATED ALKALINE EARTH METAL ALUMINATE PHOSPHOR

Kōichi Takahashi, Odawara; Kinichiro Narita, Chigasaki; Akiyasu Kagami, Ninomiya; Takashi Hase, Fujisawa; Yoshiyuki Mimura, Chigasaki; Junro Koike, Machida; Ryuya Toyonaga, Ebina, and Takehiro Kojima, Kawasaki, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka and Nippon Hōsō Kyōkai, Tokyo, both of, Japan

Filed Mar. 15, 1977, Ser. No. 777,692

Int. Cl.[2] C09K *11/46*

U.S. Cl. 252—301.4 R **4 Claims**

1. A process for preparing a divalent europium activated alkaline earth metal aluminate phosphor comprising: mixing magnesium oxide or a magnesium compound convertible to magnesium oxide at the firing temperature used in said process, a barium halide or a mixture of a barium halide and barium oxide or a barium compound decomposable to barium oxide at said firing temperature containing barium halide at such a rate that the amount of barium contained in the barium halide is not less than 70% by weight of the total amount of barium in said mixture, an aluminum compound convertible to aluminum oxide at said firing temperature, and Eu_2O_3 or a europium compound convertible to Eu_2O_3 at said firing temperature at at mixing ratio which satisfies the composition formula

$$aMgO.bBaO.cAl_2O_3dEuO$$

wherein, a, b, c and d are numbers satisfying the conditions

$$a+b+c+d=10, \text{ and}$$

$0<a\leqq 2.00$, $0.25\leqq b\leqq 2.00$, $6.0\leqq c\leqq 8.5$, $0.05\leqq d\leqq 0.30$; firing the mixture in air at a temperature of 1200° C. to 1600° C; and

then firing the fired mixture in a reducing atmosphere at a temperature of 1000° C. to 1600° C.

4,161,458

STABLE AQUEOUS AEROSOL SYSTEM WITH CARBON DIOXIDE PROPELLANT

Gary G. Kolleth, Lakewood, Colo., assignor to Scott's Liquid Gold Incorporated, Denver, Colo.

Filed Aug. 29, 1977, Ser. No. 828,974
Int. Cl.[2] C09K *3/30*
U.S. Cl. 252—305 3 Claims

1. An aqueous aerosol system suitable for use in a pressurized aerosol container having a compressed gas propellant, comprising a gaseous carbon dioxide propellant phase and an aqueous liquid phase which liquid phase contains diethylamine, which undergoes a reversible reaction with carbon dioxide or carbonic acid, the amount of said diethylamine being sufficient to impart a neutral or nearly neutral pH to the liquid phase of the system at equilibrium after pressurization with the carbon dioxide.

4,161,459

COMPOSITION FOR CHEMICALLY PEELING FRUITS AND VEGETABLES

Shigeru Otsuka, Toyonaka; Zenichi Mori, Wakayama; Tetsuhiko Tominaga, Takarazuka; Junichi Tamura, Wakayama; Yoshio Shimoda, Ikeda; Takashi Takeuchi, Wakayama; Masakazu Oku, Kawabe, and Kan Mori, Wakayama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd. and Kao Soap Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 822,705, Aug. 8, 1977, Pat. No. 4,130,668, which is a continuation of Ser. No. 679,018, Apr. 21, 1976, abandoned. This application Sep. 11, 1978, Ser. No. 941,209
Claims priority, application Japan, Apr. 30, 1975, 50-52192
Int. Cl.[2] B01F *17/00;* A23L *1/212*
U.S. Cl. 252—352 9 Claims

1. An aqueous alkaline solution for peeling fruits or vegetables consisting essentially of

I. from 0.1 to 1.5 weight percent of alkali,

II. from 0.005 to 1.0 weight percent of a mixture of

(a) polyoxyethylene (3–60) sorbitan fatty acid (C_8–C_{18}) ester having an HLB value higher than 9, and

(b) glycerin fatty acid (C_8–C_{18}) ester having an HLB value not higher than 9, said mixture containing from one to 5 parts by weight of component (a) and from one to 5 parts by weight of component (b) and,

III. the balance being essentially water.

4. An aqueous alkaline solution for peeling fruits or vegetables consisting essentially of

I. from 0.1 to 1.5 weight percent of alkali,

II. from 0.005 to 1.0 weight percent of a mixture of

(a) polyoxyethylene (3–60) sorbitan fatty acid (C_8–C_{18}) ester having an HLB value higher than 9, and

(b) sorbitan fatty acid (C_8–C_{18}) ester having an HLB value not higher than 9, said mixture containing from one to 5 parts by weight of component (a) and from one to 5 parts by weight of component (b) and,

III. the balance being essentially water.

7. An aqueous alkaline solution for peeling fruits or vegetables consisting essentially of

I. from 0.1 to 1.5 weight percent of alkali,

II. from 0.005 to 1.0 weight percent of a mixture of

(a) polyoxyethylene (3–60) sorbitan fatty acid (C_8–C_{18}) ester having an HLB value higher than 9, and

(b) propylene glycol fatty acid (C_8–C_{18}) ester having an HLB value not higher than 9, said mixture containing from one to 5 parts by weight of component (a) and from one to 5 parts by weight of component (b) and,

III. the balance being essentially water.

4,161,460

METHOD OF ENHANCING OLEOPHILIC AND HYDROPHOBIC PROPERTIES OF ABSORBENT MATERIAL

Vincent N. R. Sewell, Victoria, Canada, assignor to R. B. Cybernetrix (1970) Ltd., Canada

Continuation of Ser. No. 522,260, Nov. 8, 1974, abandoned. This application Oct. 26, 1976, Ser. No. 735,157
Int. Cl.[2] B01J *31/02*
U.S. Cl. 252—426 2 Claims

1. A process for rendering open-cell elastomeric polyurethane foam material preferentially oleophilic in the presence of water to improve the oil absorption and the oil immobilization capacity of said foam material, comprising the steps of coating the surfaces of said foam material with a coating material consisting essentially of paraffin wax dissolved in an organic solvent, removing an excess of the dissolved wax and organic solvent by draining the excess from the foam material and by squeezing the foam material to remove excess wax solution from within said foam material and drying the resulting foam material to remove said solvent and to obtain a porous foam sorbent material impregnated with from about ½ percent to 10 percent by weight of said wax whereby the foam material obtained is suitable for picking up oil spills from water surfaces.

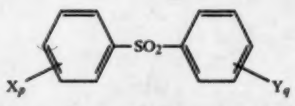
4,161,461

TREATMENT OF TRANSITION METAL COMPOUND

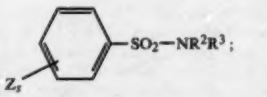
Anthony D. Caunt, Welwyn Garden City, and Ian G. Williams, Letchworth, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 7, 1977, Ser. No. 849,357
Claims priority, application United Kingdom, Nov. 15, 1976, 47449/76
Int. Cl.[2] C08F *4/64*
U.S. Cl. 252—429 B 16 Claims

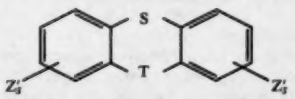
1. In a process of treating a transition metal halide in which a solid halide of a transition metal of Groups IVA to VIA of the Periodic Table is subjected to grinding in the presence of a Lewis Acid compound and at least one organic sulphur-containing compound of one of the formulae (A), (B) or (C), and the ground product is washed with a liquid medium, wherein formula (A) is



formula (B) is



and
formula (C) is



where
X, or each X, is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a

group $—NR^1R^2$, or two groups X can together form an unsaturated hydrocarbon ring;

Y, or each Y, is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a group $—NR^1R^2$, or two groups Y can together form an unsaturated hydrocarbon ring; or a group X and a group Y may be replaced by a link between the two phenyl groups attached to the $—SO_2—$ group, the linkage being either direct or through a group —O—, $—CH_2—$, $—NR^1—$, —S—, or —CO—;

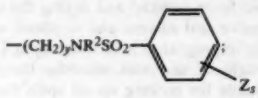
R^1 is a hydrogen atom or a hydrocarbyl group;

R^2 is a hydrocarbyl group;

p and q are each, independently, an integer from 0 up to 5;

Z, or each Z, is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a group $—NR^1R^2$, or two groups Z can together form an unsaturated hydrocarbon ring;

R^3 is a hydrocarbyl group or a group



s is an integer from 0 up to 5;

y is a positive integer;

T is —S—, —O—, $—NR^2—$, or —CO—; and

Z′, or each Z′, is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio or arylthio group, or a group $—NR^1R^2$, the improvement which comprises adding up to 2.50 moles of aluminum chloride to the solid halide of the transition metal for each gramme atom of the transition metal which is present in the solid halide of the transition metal, grinding the mixture of aluminum chloride and the solid halide of the transition metal, adding to the ground mixture from 0.01 up to 0.50 moles of titanium tetrachloride, and from 0.10 up to 2.50 moles of the organo-sulphur containing compound, for each gramme atom of the transition metal which is present in the solid halide of the transition metal, grinding the mixture thereby obtained and washing the ground product with a liquid medium capable of dissolving the at least one organic sulphur-containing compound and at least one of aluminum chloride or titanium tetrachloride or a complex of the at least one organic sulphur-containing compound and at least one of aluminum chloride or titanium tetrachloride.

4,161,462

CATALYST FOR (CO) POLYMERIZATION OF ETHYLENE, APLHA-OLEFINES, CONJUGATED AND NON-CONJUGATED DIENES, A METHOD OF PREPARING SAME

Jury N. Bocharov, ulitsa Dokukina, 3, korpus 1, kv. 13; Viktor A. Kabanov, Lomonosovsky prospekt, 3, korpus 1, kv. 3; Marina A. Martynova, ulitsa Stasovoi, 4, kv. 34, all of Moscow; Valery G. Popov, ulitsa 1, 17/1, kv. 3, Moskovskaya oblast poselok chernogolooka; Vladimir I. Smetanjuk, ulitsa Stasovoi, 4, kv. 34, and Viktor V. Fedorov, 3 Samotechny Pereulok, 23, kv. 88, both of Moscow, all of U.S.S.R.

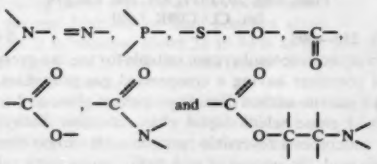
Continuation of Ser. No. 490,992, Jul. 23, 1974, abandoned. This application Oct. 29, 1976, Ser. No. 737,108

Claims priority, application U.S.S.R., Jul. 24, 1973, 1950384

Int. Cl.[2] B01J *31/02, 31/12*

U.S. Cl. 252—429 B **17 Claims**

1. A catalyst for the polymerization and copolymerization α-olefines and conjugated and non-conjugated dienes comprising 0.1 to 50 wt.% of a compound of a transition metal from Groups IV–VIII of the periodic system selected from the group consisting of titanium, vanadium, chromium and nickel, said compound being chemically combined and distributed over the surface and within the volume of a rubbery polmeric carrier selected from the group consisting of natural rubber, synthetic rubber based on conjugated dienes, synthetic rubber based on ternary copolymers of ethylene, propylene and polyenes, synthetic rubber based on ternary copolymers of ethylene, propylene and acetylenes and synthetic siloxane rubber containing unsaturated bonds, said polymeric carrier, containing from 1 to 50 wt.% of a moiety selected from the group consisting of



and mixtures thereof and a co-catalyst of an organometallic compound of a metal selected from the group consisting of magnesium and aluminum at a molar ratio of the co-catalyst to the compound of the transition metal ranging from 1 to 500, with said catalyst being in the form of a gel which is swellable but insoluble in the reaction medium.

4,161,463

OLEFIN DISPROPORTIONATION OVER SILICA-RARE EARTH METAL OXIDE CATALYSTS

John W. Myers, and Jesse R. Harris, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 739,765, Nov. 8, 1976, Pat. No. 4,102,939. This application May 23, 1978, Ser. No. 908,606

Int. Cl.[2] B01J *29/06, 23/10*

U.S. Cl. 252—455 R **20 Claims**

1. A catalyst composition consisting essentially of at least one rare earth metal oxide in an effective amount supported on silica, wherein said rare earth metal oxide is the oxide of yttrium, lanthanum, cerium, praseodymium, dysprosium, or mixture thereof, activated by

(a) treatment in hydrogen, nitrogen, or mixture at elevated temperatures, or

(b) by treatment in a molecular oxygen containing gas at elevated temperatures followed by step (a).

8. A catalyst composition consisting essentially of a rare earth metal oxide supported on silica, calcined in a molecular-oxygen-containing atmosphere, followed by activation treatment with hydrogen, nitrogen, or admixture at elevated temperatures, wherein said rare earth metal oxide is selected from the group consisting of the oxides of yttrium, lanthanum, cerium, praseodymium, dysprosium, and mixtures, and wherein said catalyst contains about 0.05 to 20 weight percent of the rare earth oxide expressed as the metal based on the total weight of catalyst including silica support.

4,161,464

DEVULCANIZED RUBBER COMPOSITION AND PROCESS FOR PREPARING SAME

Paul P. Nicholas, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

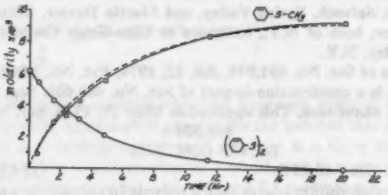
Filed Mar. 24, 1978, Ser. No. 889,999

Int. Cl.[2] B29H *19/00;* **C08C** *2/06*

U.S. Cl. 260—2.3 **19 Claims**

1. A process for devulcanization of scrap rubber comprising, (a) comminuting said scrap rubber to obtain vulcanizate particles small enough to be adequately devulcanized within a predetermined period of time, and, (b) contacting said vulcanizate particles with (i) an organic solvent having dissolved therein a predetermined concentration of an onium salt of an element, selected from the group consisting of nitrogen, phosphorus, and sulfur, and (ii) an aqueous solution containing a

sufficient concentration of OH^- ions to selectively disrupt enough polysulfide crosslinks to produce devulcanized rubber



particles which contain less than about one-half the crosslink density of said scrap rubber from which said devulcanized rubber particles are derived.

4,161,465

PVC RED-MUD COMPOSITIONS

Paul L. C. Hao; Horng S. Tang, and Wei W. Hsu, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Filed Jul. 18, 1977, Ser. No. 816,668

Int. Cl.² C08K 3/22; C08L 27/06

U.S. Cl. 260—2.3 **10 Claims**

1. A polyvinylchloride composition having good tensile strength and retention of elasticity which comprises 20 to 85 weight percent polyvinylchloride and 5 to 80 weight percent red-mud.

4,161,466

SMOKE RETARDED POLYMER COMPOSITIONS CONTAINING AMINE MOLYBDATES

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 841,182, Oct. 11, 1977, Pat. No. 4,129,540, which is a continuation-in-part of Ser. No. 770,168, Feb. 14, 1977, Pat. No. 4,053,455. This application Sep. 22, 1978, Ser. No. 944,948

Int. Cl.² C08K 5/31, 5/34, 5/18

U.S. Cl. 260—28 R **14 Claims**

1. A smoke retarded composition comprising

(A) a smoke retardant amount of at least one amine molybdate, the amine used in preparing said amine molybdate containing from 1 to 40 carbon atoms and from 1 to 10 primary, secondary or tertiary amine groups or a mixture thereof, and

(B) at least one polymer selected from the group consisting of polyamides, poly(phenylene oxides), polysulfones, and epihalohydrin polymers.

4,161,467

REACTIVE CATALYST FOR AMINO RESINS

Andrew C. Markessini, Thessaloniki, Greece, assignor to Teukros A.G., Basel, Switzerland

Filed Oct. 4, 1977, Ser. No. 839,248

Claims priority, application Greece, Oct. 12, 1976, 10988/51908; Apr. 27, 1977, 53301

Int. Cl.² C08L 61/24

U.S. Cl. 260—29.4 R **7 Claims**

1. A material for bonding together water-penetrable cellulosic particles which comprises: an amino resin, and

1 to 30% by weight of a catalyst system, calculated as 100% solids and based on the weight of the amino resin, to effect polycondensation of the amino resin, said catalyst system comprising an aqueous solution of an organic component and an inorganic component wherein the organic component is formaldehyde and urea or a nonresinous condensation product of formaldehyde and urea and the inorganic component is a water-soluble alkali metal halide.

4,161,468

PROCESS FOR THE PREPARATION OF GRAFT POLYMER DISPERSIONS EMPLOYING LIQUID FREE RADICAL CATALYSTS

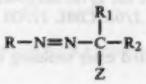
John E. Davis, Woodhaven, and Pauls Davis, Gibraltar, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 846,034, Oct. 27, 1977, abandoned. This application Jun. 7, 1978, Ser. No. 913,911

Int. Cl.² C08F 2/06, 4/04, 20/44; C08L 67/06

U.S. Cl. 260—30.4 R **7 Claims**

1. In a process for the preparation of graft polymer dispersions by the in situ polymerization in the presence of a free radical catalyst of an ethylenically unsaturated monomer or mixture of monomers in a liquid polyol, the improvement which comprises employing as the free radical catalyst an unsymmetrically-substituted azo compound having a melting point less than 30° C. and a ten hour half-life between 55° C. and 100° C. and represented by the following formula



wherein

R is a lower alkyl of 1–6 carbon atoms and

R_1 is selected from alkyl of 1–20 carbon atoms, phenalkyl of 7–12 carbon atoms, cycloalkyl of 3–12 carbon atoms, a heterocyclo radical wherein the hetero atoms is O, S or N and together with R_2 can form an alkylene biradical of from 2 to 16 carbon atoms, and can be substituted by Z, R_2 is R, or phenyl and Z is H, CN, S—R_2 or O—R_2.

4,161,469

POLYALKYLENE TEREPHTHALATE AND ORGANOPOLYSILOXANE-POLYCARBONATE BLOCK COPOLYMER BLENDS

Donald G. LeGrand, Burnt Hills, and Albert F. Yee, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 9, 1978, Ser. No. 868,023

Int. Cl.² C08L 67/02, 69/00, 83/06

U.S. Cl. 260—40 R **10 Claims**

1. A polymer blend comprising a polyalkylene terephthalate resin and an organopolysiloxane-polycarbonate block copolymer having impact values greater than the impact value of the polyalkylene terephthalate resin component of the blend.

4,161,470

POLYESTER OF 6-HYDROXY-2-NAPHTHOIC ACID AND PARA-HYDROXY BENZOIC ACID CAPABLE OF READILY UNDERGOING MELT PROCESSING

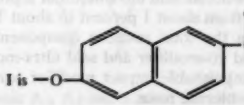
Gordon W. Calundann, North Plainfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 20, 1977, Ser. No. 843,993

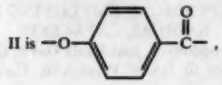
Int. Cl.² C08G 63/06

U.S. Cl. 260—40 P **42 Claims**

1. A melt processable wholly aromatic polyester capable of forming a thermotropic melt phase at a temperature below approximately 350° C. consisting essentially of the recurring moieties I and II which may include substitution of at least some of the hydrogen atoms present upon an aromatic ring wherein:



-continued



with said optional substitution if present being selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, and mixtures of the foregoing, and wherein said polyester comprises approximately 10 to 90 mole percent of moiety I, and approximately 10 to 90 mole percent of moiety II.

4,161,471

ELASTOMER MODIFIED UNSATURATED MOLDING COMPOSITIONS

Robert J. Kassal, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 13, 1978, Ser. No. 896,043

Int. Cl.[2] C08K *3/06;* **C08L** *11/00, 19/00, 67/06*

U.S. Cl. 260—40 R **8 Claims**

1. A filled, unsaturated ester molding composition comprising:

(a) 10–60 weight percent of an α,β-ethylenically unsaturated ester polymerizable molding resin, the unsaturation number of said resin being between about 150 and 250,

(b) 39–89 weight percent of a polymerizable monomer, and

(c) 1–30 weight percent of an elastomeric modifier selected from the group consisting of chloroprene polymers and hydrocarbon polymers, wherein the chloroprene polymer is selected from the group consisting of homopolymers of chloroprene, copolymers of chloroprene with sulfur, copolymers of chloroprene with at least one copolymerizable organic monomer, and copolymers of chloroprene with sulfur and at least one copolymerizable organic monomer, wherein chloroprene constitutes at least 50 weight percent of the organic monomer make-up of the copolymer, and wherein the hydrocarbon polymer is selected from the group consisting of ethylene/propylene dipolymers and copolymers of ethylene, propylene and at least one nonconjugated diene.

4,161,472

IMPACT MODIFIED VINYL CHLORIDE POLYMER COMPOSITION

Marvin H. Lehr, Bath, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 23, 1978, Ser. No. 871,665

Int. Cl.[2] C08L *51/04, 53/02*

U.S. Cl. 525—4 **15 Claims**

1. A normally rigid thermoplastic composition comprising (a) a matrix comprising a vinyl chloride resin, (b) an impact modifier or co-modifier in said matrix for reducing the brittle temperature of said vinyl chloride resin, said impact modifier being present in an amount in the range from about 3 percent to about 25 percent by weight based on total resinous components, so as to produce at least a 20 percent improvement in Izod impact strength of non-impact-modified vinyl chloride resin, and (c) a block copolymer ultra-modifier consisting essentially of a block copolymer of a vinyl aromatic compound (S) and a conjugated diene (D), wherein said vinyl aromatic compound (S) is selected from the group consisting of styrene, α-methyl styrene, vinyl toluene, vinyl xylene, and vinyl naphthalene, said conjugated diene (D) is selected from the group consisting of butadiene, isoprene, 1,3-pentadiene, and 2,3-dimethyl-butadiene, wherein said ultra-modifier is present in an amount in the range from about 1 percent to about 15 percent by weight, based on the total resinous components of said composition, and said co-modifier and said ultra-modifier are each present as distinguishable impact modifier particles dispersed in said vinyl chloride resin.

4,161,473

2,4,6-TRIALKYL-3-HYDROXYPHENYLALKANE PHOSPHONATE AND PHOSPHINATE STABILIZERS

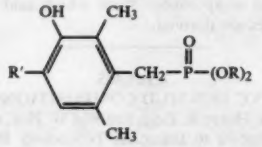
John D. Spivack, Spring Valley, and Martin Dexter, Briarcliff Manor, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 491,074, Jul. 22, 1974, Pat. No. 3,962,376, which is a continuation-in-part of Ser. No. 400,602, Sep. 25, 1973, abandoned. This application Mar. 19, 1976, Ser. No. 668,358

Int. Cl.[2] C08L *5/53*

U.S. Cl. 260—45.85 S **15 Claims**

8. A composition comprising a polyolefin containing a stabilizing quantity of (a) a compound of the formula:



wherein R is an alkyl group of 12 to 24 carbon atoms and R′ is a branched-chain alkyl of 3 to 8 carbon atoms and (b) a secondary stabilizer selected from the group consisting of distearyl thiodipropionate and dilauryl thiodipropionate.

4,161,474

BIS-(ALKYLAMINOPHENOXY)ALKANES AS ANTIDEGRADANTS FOR RUBBER

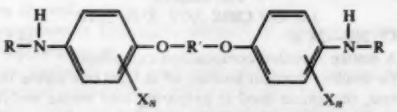
Robert H. Campbell, Akron, and Gene R. Wilder, Medina, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 25, 1977, Ser. No. 854,671

Int. Cl.[2] C08K *5/18*

U.S. Cl. 260—45.9 QA **7 Claims**

1. Vulcanizable diene rubber having incorporated therein a stabilizing amount of a compound according to the formula



wherein the Rs are the same or different secondary alkyl radicals, including cyclic alkyls, of from 3 to 8 carbons, R′ is a divalent straight or branched chain alkyl radical of from 1 to 6 carbon atoms, X is lower alkyl or halogen, and n is an integer of 0 to 4.

4,161,475

SULFURIZED MANNICH CONDENSATION PRODUCTS AND LUBRICANTS CONTAINING SAME

Kirk E. Davis, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

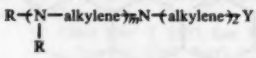
Continuation-in-part of Ser. No. 656,228, Feb. 9, 1976, Pat. No. 4,090,854, which is a continuation-in-part of Ser. No. 528,189, Nov. 29, 1974, abandoned. This application Sep. 19, 1977, Ser. No. 834,618

Int. Cl.[2] C07G *17/00*

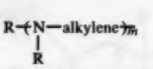
U.S. Cl. 260—132 **14 Claims**

1. A sulfurized Mannich condensation product containing about 0.1 to about 20% sulfur by weight, based on the total weight of the product, said sulfur having been introduced into the product by sulfurizing with elemental sulfur a nitrogen-containing Mannich condensation product made from a phenol bearing a substantially hydrocarbyl substituent of about 6 to about 400 carbon atoms, formaldehyde, a formaldehyde precursor or a C_{2-7} aliphatic-based aldehyde and an amino com-

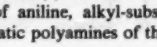
pound selected from the group consisting of (1) heterocyclic-substituted polyamines of the formula



wherein each R is independently a hydrogen atom or a C_{1-12} substantially hydrocarbyl group with the proviso that at least one R is a hydrogen atom and alkylene is a C_{1-10} alkylene group, m is a whole number of 1 to 10, and Y is an oxygen, divalent sulfur atom or —N—R* and R* is either a R or a



group and (2) aromatic amines selected from the group consisting of aniline, alkyl-substituted anilines, phenothiazine and aromatic polyamines of the general formula



wherein Ar is an aromatic nucleus of 6 to about 20 carbon atoms, each R is as defined hereinabove, and y is 2 to about 8.

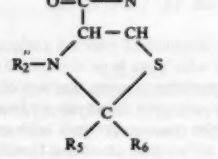
4,161,476

α-HALO-2-OXO-1-AZETIDINEMETHANE-CARBOXYLIC ACID COMPOUNDS

Karl Heusler, Basel, Switzerland, and Robert B. Woodward, Cambridge, Mass., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 524,699, Nov. 18, 1974, Pat. No. 4,052,408, which is a continuation of Ser. No. 843,754, Jul. 22, 1969, abandoned. This application Jul. 11, 1977, Ser. No. 814,763
Claims priority, application Switzerland, Jul. 23, 1968, 10994/68; Dec. 11, 1968, 18502/68
Int. Cl.[2] C07D *277/62*
U.S. Cl. 260—306.7 C **5 Claims**

1. A compound of the formula Ia



(Ia)

in which

$R^{A'}_1$ represents a member selected from the group consisting of lower alkyl of 1–4 carbon atoms, halogenolower alkyl of 1–4 carbon atoms, adamantyl, monocyclic cycloalkyl with 3 to 8 ring carbon atoms and phenyl-lower alkyl,

R''_2 is carbo lower alkoxy with up to 7 carbon atoms in the lower alkyl residue, carbovinyloxy, carbocycloalkoxy, wherein cycloalkyl is monocyclic cycloalkyl with 3 to 6 ring carbon atoms or adamantyl, carbobenzyloxy, carbodiphenylmethoxy or carbo(α-4-biphenylyl-α-methylethoxy), each of the substituents R_5 and R_6 represents a lower alkyl of from 1–4 carbon atoms and Hal represents a member selected from the group consisting of a chlorine and bromine atom.

4,161,477

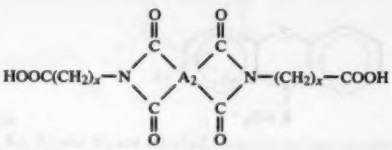
POLYIMIDE RESIN-FORMING COMPOSITION

John V. Long, 1756 E. Lexington Ave., El Cajon, Calif. 92021, and John Gagliani, San Diego, Calif., assignors to John V. Long, El Cajon, Calif., a part interest

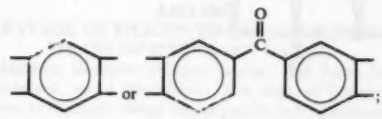
Filed Apr. 8, 1976, Ser. No. 674,762
Int. Cl.[2] C07D *209/34*
U.S. Cl. 260—326 C **6 Claims**

1. An imide-forming material consisting essentially of a stoichiometric adduct of:

(a) an N-substituted cyclic bisimide of the formula

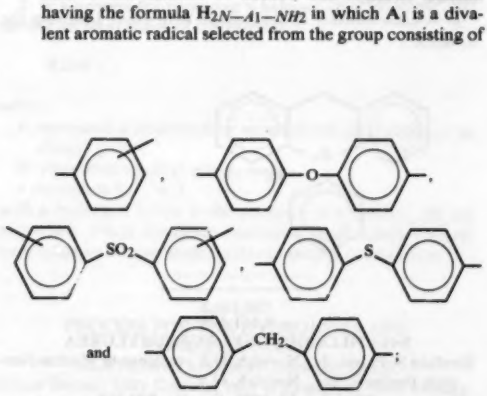


wherein x is 4 to 6 and A_2 is a tetravalent, aromatic radical of the formula

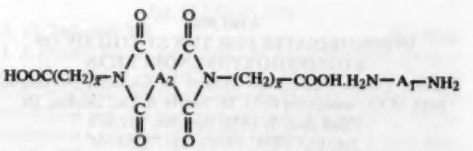


and

(b) one or more aromatic diamines capable of forming a polyimide by an exchange reaction with the terminal carboxyl groups of said bisimide upon the application of heat to said mixture or adduct, said aromatic diamine having the formula $H_2N—A_1—NH_2$ in which A_1 is a divalent aromatic radical selected from the group consisting of



said adduct being of the formula:



wherein A_1, A_2 and x have the above-indicated values.

4,161,478
PHOTOINITIATORS

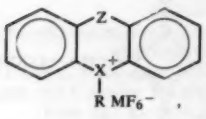
James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 789,419, Apr. 21, 1977, Pat. No. 4,136,102, which is a division of Ser. No. 574,006, May 2, 1975, abandoned, which is a continuation-in-part of Ser. No. 466,374, May 2, 1974, abandoned, Ser. No. 466,375, May 2, 1974, abandoned, and Ser. No. 466,378, May 2, 1974, abandoned. This application Sep. 14, 1977, Ser. No. 833,146

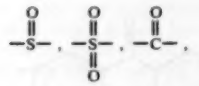
Int. Cl.[2] C07C *149/00, 14/30;* C07D *335/10*

U.S. Cl. 260—327 B 11 Claims

1. A photoinitiator having the formula,



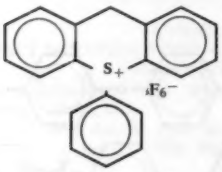
where M is selected from P, As and Sb, X is a Group VIa element selected from sulfur and selenium, R is a monovalent organic aromatic radical having from 6–20 carbon atoms Z is a member selected from the class consisting of —S—,



O, Se,

—CH_2— and —C_2H_4—, and R^4 is selected from $C_{(1-8)}$ alkyl and $C_{(6-13)}$ aryl.

3. A photoinitiator in accordance with claim 1, having the formula,



4,161,479
5-(4-CHLOROPHENYL)FURFURYLUREA

Stanford S. Pelosi, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jul. 10, 1978, Ser. No. 922,860

Int. Cl.[2] C07D *307/54*

U.S. Cl. 260—347.3 1 Claim

1. The compound 5-(4-chlorophenyl)furfurylurea.

4,161,480
INTERMEDIATES FOR THE SYNTHESIS OF 4-DEMETHOXYDAUNORUBICIN

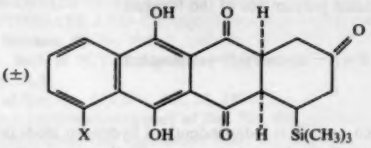
Raphael Pappo, Skokie, and Robert B. Garland, Northbrook, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Jun. 5, 1978, Ser. No. 912,671

Int. Cl.[2] C07C *49/66, 49/73, 63/44*

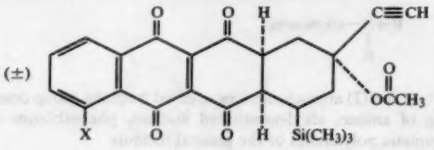
U.S. Cl. 260—365 9 Claims

1. A compound of the formula



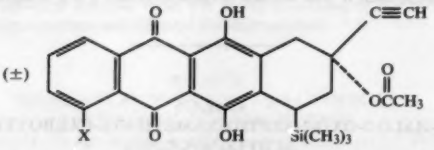
wherein X is hydrogen, methoxy, or hydroxy.

4. A compound of the formula



wherein X is hydrogen, methoxy, or hydroxy.

7. A compound of the formula



wherein X is hydrogen, methoxy, or hydroxy.

4,161,481
PROCESS FOR THE ISOLATION OF PURIFIED ANTHRAQUINONE

Joachim Priemer, Odenthal; Georg Nicklas, and Nikolaus Schulz, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 16, 1977, Ser. No. 852,123

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1976, 2655103

Int. Cl.[2] C07C *49/68*

U.S. Cl. 260—369 8 Claims

1. Process for the isolation of purified anthraquinone from crude anthraquinone which has been obtained by oxidation of naphthalene to give naphthoquinone, reaction of the oxidation product with butadiene to give tetrahydroanthraquinone, oxydehydrogenation of the reaction product with molecular oxygen to give a crude anthraquinone and optionally removal of naphthalene, phthalic anhydride and low-boiling substances from this crude anthraquinone, which comprises treating said crude anthraquinone with an oxygen compound of the elements of the first and/or second main group of the Periodic System in solid, pulverulent form and in an amount of 0.1 to 20% by weight relative to said crude anthraquinone at an elevated temperature, optionally in the presence of an organic solvent, and then isolating purified anthraquinone by subliming the pretreated anthraquinone in the presence of said oxygen compound at a temperature of about 190° to about 290° C. and a pressure of about 1 to about 90 mm Hg and then desubliming it under the same pressure, or by vaporizing the pretreated anthraquinone at a temperature of about 290° to about 380° C. and a pressure of about 90 to about 760 mm Hg and condensing the vapour under a pressure of about 90 to about 760 mm Hg.

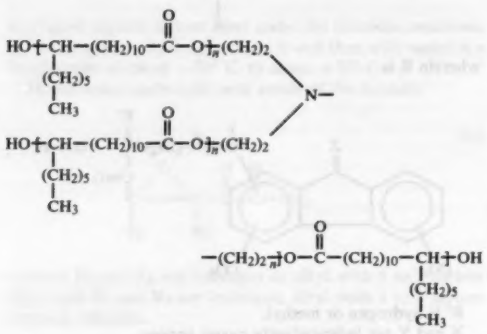
4,161,482

PRODUCTION OF POLYOLS CONTAINING BASIC NITROGEN

Suresh K. Nema, Kerala, India, assignor to The Indian Space Research Organisation, Bangalore, India

Filed Mar. 2, 1977, Ser. No. 773,543
Int. Cl.[2] C09F 5/00; C11C 3/00
U.S. Cl. 260—404 1 Claim

1. Polyols containing basic nitrogen of the formula



wherein n denotes the degree of polymerization of a homopolymer of 12-hydroxy stearic acid which varies between 2 and 10.

4,161,483

HYDROGENATION PROCESS

Raymond M. Cahen, Brussels, Belgium, assignor to Labofina S.A., Brussels, Belgium

Filed Jul. 31, 1978, Ser. No. 929,540
Claims priority, application Luxembourg, Dec. 2, 1977, 78621
Int. Cl.[2] C11C 3/12; B01J 31/12
U.S. Cl. 260—409 8 Claims

1. A process for partially and selectively hydrogenating a natural oil which comprises the step of treating said natural oil in the presence of a nickel catalyst and such an amount of an organic nitrogen-containing basic compound which is equivalent to form about 5 to about 40 atoms of nitrogen per 100 atoms of nickel with hydrogen at a hydrogen pressure and a reaction sufficient to obtain a substantially liquid hydrogenation product rich in monoenic compounds and with a low content in trans-isomers, conjugated dienic compounds and saturated compounds.

4,161,484

FRACTIONATION OF GLYCERIDE OILS BY COOLING AND UNDER HOMOGENEOUS AGITATION

Hendrikus J. van den Berg, Terheyden, Netherlands, assignor to Lever Bros. Co., New York, N.Y.

Continuation of Ser. No. 756,687, Jan. 4, 1977, abandoned. This application Mar. 28, 1978, Ser. No. 890,888
Claims priority, application United Kingdom, Jan. 8, 1976, 651/76
Int. Cl.[2] C09F 5/10; C11B 3/00
U.S. Cl. 260—428.5 18 Claims

1. A process for fractionating fatty material comprising cooling said fatty material from a wholly liquid condition, in a cooling zone defined between the inner walls of a chamber and a stirrer having a smooth profile mounted in said chamber, to a temperature at which partial crystallization of said fatty material takes place while agglomeration of crystals resulting from homogeneous agitation occurs in said cooling zone; and separating agglomerated fat crystals thus formed from the remaining liquid fatty material.

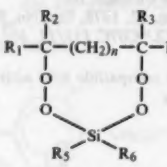
4,161,485

CYCLIC SILYL PEROXIDES

Reidar Halle, Novato, and Lawrence A. Bock, Walnut Creek, both of Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,817
Int. Cl.[2] C07F 7/08
U.S. Cl. 260—448.2 R 21 Claims

1. A cyclic silyl peroxide having the formula



wherein

R_1, R_2, R_3 and R_4 are selected from the group consisting of lower alkyl having from 1 to 3 carbon atoms;

R_5 and R_6 are each selected from the group consisting of alkyl, alkenyl and aryl; and

n is an integer from 1 to 4.

4,161,486

CLEAVAGE OF SILICON-TO-CARBON BONDS BY MEANS OF HYDROGEN HALIDE

Hans-Joachim Kötzsch; Rüdiger Draese, and Hans-Joachim Vahlensieck, all of Rheinfelden, Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Feb. 24, 1978, Ser. No. 880,903
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1977, 2708406
Int. Cl.[2] C07F 7/12
U.S. Cl. 260—448.2 E 6 Claims

1. In a process for preparing a halogen alkyl silane by contacting an alkyl silane of the formula

$$R_nSiR'_{4-n}$$

where

R represents a substituted or unsubstitued alkyl group or an alkenyl group,

R' represents an alkyl group, and

n represents 0, 1, or 2

with a hydrogen halide in the presence of a catalyst, the improvement which comprises employing as the catalyst aluminum oxide or an aluminum oxide-containing composition.

4,161,487

PROCESS FOR THE HYDROLYSIS AND CONDENSATION OF ALKYL/ARYL-TRICHLOROSILANES

Dieter Börner; Götz Koerner, both of Essen, and Gerd Rossmy, Haltern, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Oct. 18, 1977, Ser. No. 843,219
Claims priority, application United Kingdom, Oct. 26, 1976, 44490/76
Int. Cl.[2] C07F 7/08
U.S. Cl. 260—448.2 R 10 Claims

1. A process for the hydrolysis and condensation of alkyl/aryl-trichlorosilanes containing up to 40 mole % of dialkyl, diaryl, or alkylaryldichlorosilanes comprising dissolving the chlorosilanes in liquid hydrogen chloride and carrying out the hydrolysis at a pressure of 15 to 80 atmospheres and a temperature of $-17°$ to $+47°$ C. with water in an amount of 0.165 to 0.465 moles per chlorine atom attached to a silicon atom, and

after subsequent condensation, freeing the reaction product from HCl and from silanes that have not been hydrolyzed.

4,161,488

ENZYMATIC SUBSTRATES

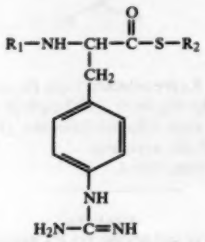
Jacob J. Plattner; Houston F. Voss, both of Libertyville, and Susan E. Magic, Lake Bluff, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Aug. 17, 1978, Ser. No. 934,297

Int. Cl.[2] C07C *153/11, 101/00*

U.S. Cl. 260—455 R **9 Claims**

1. The biologically compatible acid addition salts of a compound of the formula



wherein R_1 represents phenylsulfonyl, benzoyl, carbobenzoxy, and the halo, loweralkyl having 1–4 carbon atoms, loweralkoxy having 1–3 carbon atoms, phenyl, or hydroxy substituted derivatives thereof, or alkanoyl having 2–12 carbon atoms; and R_2 represents alkyl having 1–10 carbon atoms, or alkoxyalkyl having 2–6 carbon atoms, cycloalkyl having 5–7 carbon atoms, or benzyl, and the halo, loweralkyl having 1–4 carbon atoms, loweralkoxy having 1–3 carbon atoms, carboxy, hydroxy, or phenyl substituted derivatives thereof.

4,161,489

CONVERSION OF MIXTURES OF CARBON OXIDES AND HYDROGEN

Clarence D. Chang, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 15, 1977, Ser. No. 806,797

Int. Cl.[2] C07C *1/04*

U.S. Cl. 260—449 R **5 Claims**

1. A process for converting synthesis gas comprising hydrogen and carbon monoxide to hydrocarbons which comprises,

passing synthesis gas through a molten bath comprising alkali metal formate in which molten bath a transition metal or a transition metal compound having activity for reducing carbon monoxide is dispersed and

maintaining the temperature of said molten bath within the range of 150° C. to 350° C. and its pressure within the range of 500 to 1,000 psig.

4,161,490

ELECTRON ACCEPTOR MONOMERS

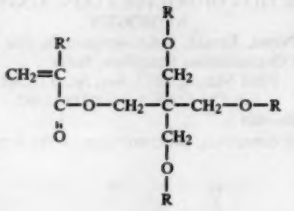
Sam R. Turner, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 793,672, May 4, 1978, which is a division of Ser. No. 615,664, Sep. 22, 1975, Pat. No. 4,050,234. This application Sep. 13, 1978, Ser. No. 942,017

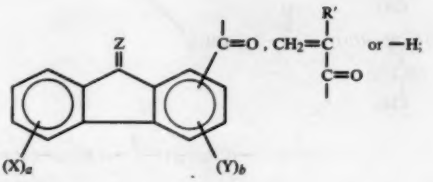
Int. Cl.[2] C07C *69/95, 121/64*

U.S. Cl. 260—465 D **1 Claim**

1. Monomers of the formula



wherein R is

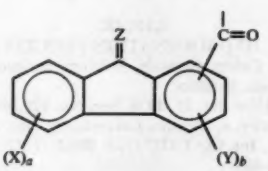


R′ is hydrogen or methyl;

X and Y are independently cyano groups;

Z is oxygen or dicyanomethylene; and a and b can range from 0 to 3;

with the proviso that at least one of R is



4,161,491

PROCESS FOR THE PRODUCTION OF ALPHA-KETOCARBOXYLIC ACID AMIDES AND CYCLOALIPHATIC PRODUCTS

Axel Kleemann; Herbert Klenk, both of Hanau, and Werner Schwarze, Frankfurt, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

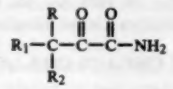
Filed Jun. 2, 1977, Ser. No. 802,903

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1977, 2708184

Int. Cl.[2] C07C *102/02, 102/08, 103/19, 103/127*

U.S. Cl. 260—557 R **32 Claims**

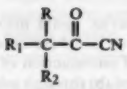
1. A process for the production of α-ketocarboxylic acid amides of the formula



(I)

where R is hydrogen, R_1 is alkyl of 1 to 18 carbon atoms or haloalkyl of 1 to 18 carbon atoms, R_2 is hydrogen, alkyl of 1 to 18 carbon atoms or haloalkyl of 1 to 18 carbon atoms or

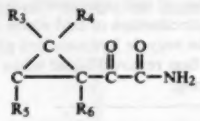
together is a cycloalkyl group of 3 to 8 carbon atoms or such a cycloalkyl group substituted by at least one alkyl group of 1 to 5 carbon atoms or by at least one halogen atom comprising saponifying an acyl cyanide of the formula



(II)

in a liquid organic solvent inert under the reaction conditions, first with gaseous hydrogen chloride and then with water at a temperature of about −70° C. to about +70° C.

24. An α-ketocarboxylic acid amide of the formula



(III)

wherein R_5 and R_6 are hydrogen or alkyl with 1 to 5 carbon atoms and R_3 and R_4 are hydrogen, alkyl with 1 to 5 carbon atoms or chlorine.

4,161,492

CYCLOALIPHATIC AMINES AND PROCESS FOR PREPARING SAME

Oskar Weissel, Krefeld, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 646,826, Jan. 6, 1976, abandoned. This application Jul. 27, 1977, Ser. No. 819,537

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1975, 2502893

Int. Cl.² C07C *85/00*

U.S. Cl. 260—563 R **17 Claims**

1. Process for preparing a cycloaliphatic amine which comprises catalytically hydrogenating an aromatic amine under elevated pressures and temperatures in the presence of a supported ruthenium catalyst wherein the support comprises hydroxides and/or hydrated oxides of chromium and manganese and/or their dehydration products.

4,161,493

PROCESS FOR THE PRODUCTION OF MERCAPTANS

Joel Barrault, Liguge; Michel Guisnet, Poitiers; Jacques Lucien, Le Mesnil Esnard, and Raymond Maurel, Jaunay Clan, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Apr. 18, 1978, Ser. No. 897,387

Claims priority, application France, Apr. 21, 1977, 77 12002

Int. Cl.² C07C *148/00*

U.S. Cl. 260—609 R **15 Claims**

1. A process for the preparation of a primary or secondary mercaptan from the corresponding thiocarbonyl compound selected from the group consisting of the thio-aldehyde and the thio-ketone, wherein the thiocarbonyl compound is heated in the presence of a primary or secondary mercaptan, and of a catalyst so as to cause a hydrogen exchange between the mercaptan and the thiocarbonyl compound, wherein said catalyst is constituted by at least one oxide of a metal selected from the groups II and III of the Periodic Table.

4,161,494

BI-AND TRIFUNCTIONAL ORGANOLITHIUM INITIATORS

Pierre Sigwalt, Saint Michel sur Orge; Patrick Guyot, Paris, and Michel Fontanille, Montmorency, all of France, assignors to Societe Chimique des Charbonnages CDF Chimie, Paris and Agence Nationale de Valorisation de la Recherche, Neully sur Seine, both of, France

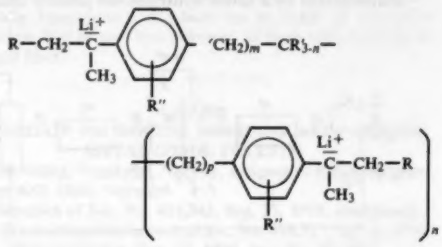
Filed Jun. 17, 1977, Ser. No. 807,484

Claims priority, application France, Jun. 17, 1976, 76 18453

Int. Cl.² C07F *1/02*

U.S. Cl. 260—665 R **3 Claims**

1. Products of the formula:



in which R'' is either a hydrogen atom or a methyl radical and either n is 1, in which case R' = H and m and p are integers, the sum of which is between 0 and 10 inclusive, or n is 2, R' then being an alkyl radical of 2 to 8 carbon atoms and m = p = 0, and in which R is an alkyl radical of 1 to 4 carbon atoms, their absorption maximum in ultraviolet light being characterised by:

(i) a wavelength of 335 nm and a molar extinction coefficient of 2.2×10^4 $mols^{-1}$ -liter $-cm.^{-1}$ when n = 1 and

(ii) a wavelength of 340 nm and a molar extinction coefficient of 3.6×10^4 $mols^{-1}$ -liter $-cm.^{-1}$ when n = 2.

4,161,495

METHOD FOR STABILIZING ACETYLENE

Clifford M. Detz, White Plains, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,550

Int. Cl.² C07C *11/24, 7/18*

U.S. Cl. 585—4 **7 Claims**

1. A method for stabilizing acetylene against explosive decomposition comprising mixing together with the acetylene a chemical free radical scavenging agent chosen from the group consisting of nitric oxide, hydrogen chloride, hydrogen bromide, hydrogen iodide and vinyl bromide as well as mixtures thereof.

4,161,496

NOVEL METHOD OF TREATING A CHARGE HYDROCARBON STREAM CONTAINING ISOBUTENE AND ALSO BUTADIENE

Heiko Hümbert, Hamburg, and Hans-Georg Wegner, Toppenstedt, both of Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Jan. 30, 1978, Ser. No. 873,302

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1977, 2706465

Int. Cl.² C07C *7/00*

U.S. Cl. 585—836 **12 Claims**

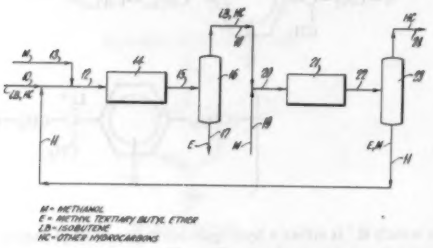
1. The method of treating a charge hydrocarbon stream containing isobutene and also butadiene to prepare a product hydrocarbon stream containing a substantially lesser quantity of isobutene but substantially all of the butadiene which comprises

contacting said charge hydrocarbon stream containing iso-

butene with a deficiency of a lower alkanol in a first reaction zone containing acid ion-exchange resin etherification first catalyst thereby forming a first product stream containing the tertiary butyl ether of said lower alkanol plus hydrocarbon and unreacted isobutene;

separating said first product stream, in a first separation zone, into (i) a bottoms containing the tertiary butyl ether of said lower alkanol and (ii) an overhead containing unreacted hydrocarbons and unreacted isobutene;

contacting said overhead containing said unreacted hydrocarbons and unreacted isobutene with excess lower alkanol, in molar amount greater than the molar amount of unreacted isobutene, in a second reaction zone containing acid ion-exchange resin etherification second catalyst, characterized by a lower hydrogen ion activity than the



hydrogen ion activity of said first catalyst, thereby forming a second product stream containing the tertiary butyl ether of said lower alkanol, plus unreacted hydrocarbons and unreacted lower alkanol;

separating said second product stream, in a second separation zone, into (i) a second overhead stream containing unreacted hydrocarbons and unreacted isobutene and (ii) a second bottoms stream containing the tertiary butyl ether of said lower alkanol, plus unreacted lower alkanol;

recovering said second overhead stream containing unreacted hydrocarbons and unreacted isobutene;

recycling said second bottoms stream, containing the tertiary butyl ether of said lower alkanol plus unreacted methanol, to said first reaction zone; and

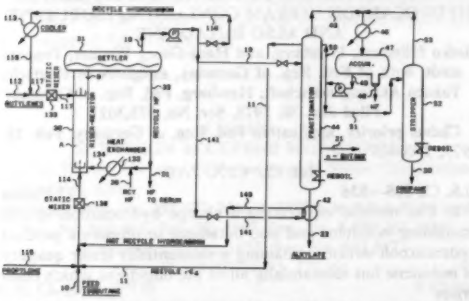
recovering said tertiary butyl ether of said lower alkanol from said bottoms from said first separation zone.

4,161,497

HF ALKYLATION INTRODUCING SEPARATE OLEFINS IN VERTICALLY EXTENDED REACTOR

Donald J. Makovec, and Thomas Hutson, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 7, 1977, Ser. No. 840,424
Int. Cl.[2] C07C *3/54*
U.S. Cl. 585—714 **6 Claims**



1. A process for alkylating an isoparaffin with a lighter and a heavier olefin in the presence of HF acid in a vertically extended reactor comprising:

(a) introducing a liquid mixture comprising an isoparaffin, said lighter olefin, and said catalyst into the lower end portion of said reactor to pass said mixture upwardly through said reactor;

(b) introducing said heavier olefin into said reactor at an intermediate section in said reactor substantially downstream of the place of introduction of said olefin in (a);

(c) passing said mixture of (b) through said reactor at suitable conditions of temperature, pressure, and residence time to form alkylate;

(d) passing the reaction effluent containing alkylate from step (c) upwardly into a settling zone to separate an HF acid phase and a hydrocarbon phase containing said alkylate product; and

(e) recycling a portion of said separated hydrocarbon phase to each point of introduction of said olefin in step (a) and step (b) so that the recycle hydrocarbon phase can function as a reaction heat removal liquid when the alkylation reaction is occurring.

4,161,498

BLENDS OF LOW MOLECULAR WEIGHT POLYALKYLENE TEREPHTHALATE RESINS AND ORGANOPOLYSILOXANE-POLYCARBONATE BLOCK COPOLYMERS

Richard C. Bopp, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 9, 1978, Ser. No. 868,021
Int. Cl.[2] C08L *67/02, 69/00, 83/06*
U.S. Cl. 525—439 **10 Claims**

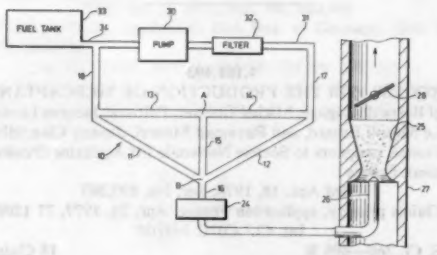
1. An improved high impact nonreinforced blend comprising a low molecular weight polyalkylene terephthalate resin having an intrinsic viscosity range of from about 0.2 to about 1.0 dl./g. and an organopolysiloxane-polycarbonate block copolymer, subject to the proviso that the blend has an impact value greater than the impact value of the polyalkylene terephthalate resin component of the blend.

4,161,499

FUEL METERING DEVICE FOR INTERNAL COMBUSTION ENGINE

Peter Floroff, 20 Nealon Ave., Toronto, Ontario, Canada (M4K 1Y9)

Continuation-in-part of Ser. No. 737,861, Nov. 2, 1976, abandoned. This application Apr. 11, 1978, Ser. No. 895,171
Int. Cl.[2] F02M *7/10*
U.S. Cl. 261—36 A **4 Claims**



1. A fuel metering device for an internal combustion engine comprising a fuel flow regulating means having a plurality of tubular passage elements forming a configuration of a generally isosceles triangle including a median, said triangle having a first side, and second and third sides extending from opposite ends of said first side to a vertex, and said median extending from the mid-point of said first side to said vertex, an input conduit connected to the junction of said first and second sides

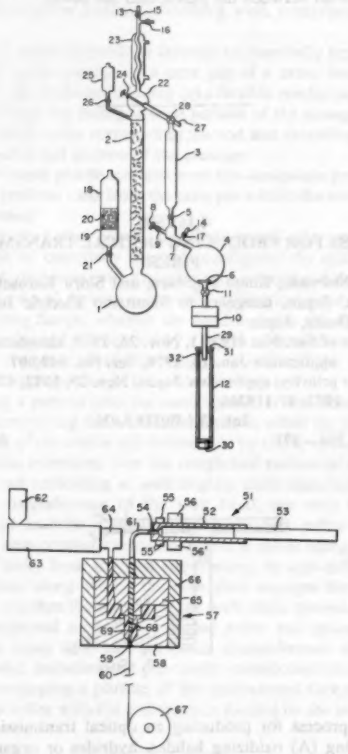
for supplying fuel under pressure to said regulating means, an output conduit connected to the junction of said first and third sides, and an extension passage element connected to said vertex, said extension passage element being connectible to a fuel nozzle adjacent a venturi in an air supply passage of an internal combustion engine whereby said regulating means is responsive to air pressure in the venturi to provide required fuel flow to said air supply passage.

4,161,500

PROCESS FOR LOW ATTENUATION METHACRYLATE OPTICAL FIBER

Henry M. Schleinitz, Kennett Square, and Paul G. Stephan, Landenberg, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 14, 1977, Ser. No. 842,166
Int. Cl.[2] D02G 3/00; B32B 27/00
U.S. Cl. 264—1 **28 Claims**



1. An improved process for making an optical fiber which consists essentially of organic high polymers, said fiber consisting of a core and cladding, said core being fabricated of a first polymer which contains a major proportion of methyl methacrylate units, which comprises the steps

(1) (a) mixing in a sealed system vinyl monomers of which at least 60 mol % is methyl methacrylate, said monomers containing 0 to 10 ppm biacetyl and 0–500 ppb of transition metal ions and being substantially free of particulate matter, with a free radical polymerization initiator and a chain transfer agent;

(b) transferring said mixture in a sealed system to a polymerization vessel, and closing said vessel;

(2) maintaining said mixture without a free liquid surface in said vessel under a pressure of 7 to 25 kg/cm^2, while simultaneously: maintaining the temperature of said mixture below about 70° C. until conversion to polymer is at least 60% complete dilatometrically, raising the temperature at a rate to reach a temperature of 90° to 100° C. at the time that conversion to polymer is at least 95% complete dilatometrically, and continuing to raise the temperature at about the same rate to a temperature in the range of 115° to 140° C., holding the temperature in said range for at least a half hour and cooling to form a solid preform of said first polymer;

(3) (a) transferring said solid preform of said first polymer to the barrel of a ram extruder adapted to receive it;

(b) advancing said solid preform through said barrel with a ram into a heated zone, whereby said preform is softened only at its forward end, and extruding said core of said fiber, and

(c) applying to said core a second polymer which is substantially amorphous and which has an index of refraction below that of said first polymer, to form said cladding of said fiber.

4,161,501

METHOD OF PRODUCING MECHANICALLY STRONG METAL OXIDE PELLETS

Hans Skretting, Vagsbygd, Norway, assignor to Elkem-Spigerverket A/S, Oslo, Norway

Continuation of Ser. No. 614,343, Sep. 17, 1975, abandoned, which is a continuation-in-part of Ser. No. 458,717, Apr. 8, 1974. This application Dec. 23, 1976, Ser. No. 753,872
Int. Cl.[2] C04B 33/32
U.S. Cl. 264—66 **6 Claims**

1. In a method of producing mechanically strong pellets useful for introduction into a smelting furnace during its operation which are for consumption in smelting furnaces at furnace temperatures of from 1250° to 1550° C. from metal oxide containing material by sintering in a shaft furnace at sintering temperatures of from above 1000° to about 1500° C. comprising admixing metal oxide containing material consumably utilizable in smelting furnaces with water and binder material said water and binder being present in sufficient amount to form raw pellets which will hold their shape and forming pellets therefrom, the improvement comprising: drying the formed pellets before sintering in a shaft furnace in a drying apparatus separate from the shaft furnace at temperatures of from about 150° to about 300° C. until the moisture content of the pellets is from about 0.2% to about 1.5% whereby the tendency of the pellets to burst and pulverize or ball together into lumps during the subsequent sintering operation is substantially reduced.

4,161,502

PROCESS FOR FORMING PLASTIC ARTICLES

Ritchie A. Wessling, and Edward F. Gurnee, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

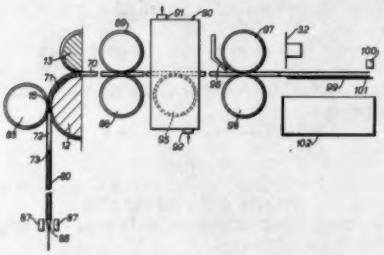
Continuation-in-part of Ser. No. 704,261, Jul. 12, 1976, abandoned, which is a continuation of Ser. No. 545,662, Jan. 30, 1975, abandoned, which is a continuation-in-part of Ser. No. 347,172, Apr. 2, 1973, abandoned. This application Apr. 2, 1977, Ser. No. 789,385
Int. Cl.[2] B29C 3/00
U.S. Cl. 264—119 **5 Claims**

1. A process of forming decomposition-free, substantially fused, clear, flexible plastic shaped articles comprising the sequential steps of (1) compressing in a compressing device a resinous powder having lamellar crystalline nonspherulitic morphology into a substantially unoriented briquette having green strength, (2) removing said briquette from the compressing device and placing said briquette in a forging press wherein lubrication is provided between the contacting surfaces of the briquette and said forging press to effect plug flow, and (3) forging said briquette into a shaped article while maintaining said briquette at a temperature between the alpha-transition temperature and the melting point of said resinous powder.

4,161,503
METHOD OF MAKING MULTITUBULAR SHEATHS

Stanley C. Foulkes, Deane; Robert Moore, Whitfield; James Ratcliffe, Bolton, and James M. Stephenson, Urmston, all of England, assignors to Chloride Group Limited, London, England

Filed Mar. 3, 1977, Ser. No. 774,201
Claims priority, application United Kingdom, Mar. 4, 1976, 8762/76; Aug. 20, 1976, 34902/76
Int. Cl.[2] B29G 5/00
U.S. Cl. 264—136 6 Claims



1. A method of making a multitubular sheath having at least five tubes comprising:

providing a porous multitubular heated fabric impregnated with 15% to 35% by weight of polymer, the polymer of the composite being a thermoplastic polymer having a melting point at least 20° C. below the temperature at which the material of the fabric melts or chars;

continuously feeding the heated fabric onto an array of parallel metal rods, one of said at least five tubes to each rod, the rods having curved inlet portions and straight sizing portions, while holding the rods in a fixed position, the rods having substantially the same cross sectional area over the whole of their length;

floatingly registering a mandrel in each of said at least five tubes such that each mandrel abuttingly engages the inlet end of its associated rod so as to assist the continuous feeding of the fabric onto the rods, cooling the heated fabric as it is continuously fed onto said rods so that the fabric at least immediately prior to the sizing portions is substantially at ambient temperature

heating the fabric on the straight sizing portions so as to permit the fabric to conform to the rod;

thereafter cooling the fabric on the rods to a temperature so as to permit the thermoplastic polymer to solidify and the tubes to become self supporting and feeding the fabric off the ends of the rods; and,

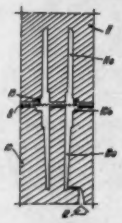
cutting it to the required length.

4,161,504
PROCESS OF MAKING A FILTER ELEMENT FOR USE IN INTRAVENOUS INFUSIONS

Luciano Baldini, Grosotto, Italy, assignor to Bieffe S.p.A., Grosotto, Italy

Filed Mar. 28, 1977, Ser. No. 782,054
Claims priority, application Italy, Aug. 10, 1976, 26186 A/76
Int. Cl.[2] B29D 23/02
U.S. Cl. 264—163 1 Claim

1. A process for making a filter which comprises an upper tubular portion and a lower tubular portion with filter fabric disposed in an intermediate enlargement, comprising providing two half molds each of which is so shaped internally as to produce one of said tubular portions, providing a plurality of cutting means projecting into the interior of a said half mold at a series of peripherally spaced points, positioning filter fabric between said two half molds, closing said two half molds together so that said cutting means penetrate and tear said fabric at said plurality of spaced points with said fabric unsupported at said plurality of spaced points, and then injecting plastic material into one of said two half molds and about said cutting means so that said plastic flows on both sides of said

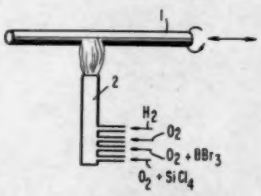


fabric, the tearing of the fabric allowing a more substantial flow of plastic through the fabric thereby to promote an improved bond between the plastic and the fabric.

4,161,505
PROCESS FOR PRODUCING OPTICAL TRANSMISSION FIBER

Satoshi Shiraishi; Kunio Fujiwara, and Shiro Kurosaki, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 419,011, Nov. 26, 1973, abandoned. This application Jan. 14, 1976, Ser. No. 648,997
Claims priority, application Japan, Nov. 25, 1972, 47-118345; Nov. 25, 1972, 47-118346
Int. Cl.[2] B05D 5/06
U.S. Cl. 264—171 40 Claims



1. A process for producing an optical transmission fiber, comprising (A) oxidizing halides, hydrides or organic compounds of Si with OF_2 or oxygen containing a gaseous fluorine compound, or (B) by the oxidation of SiF_4 to form doped fused silica containing F and depositing said doped fused silica containing F as a layer on the outer surface of a rod or pipe or pure fused silica and melting and spinning said rod or pipe having said deposited layer into a fiber.

4. A process for producing an optical transmission fiber, comprising (A) oxidizing halides, hydrides or organic compounds of Si with OF_2 or oxygen containing a gaseous fluorine compound, or (B) by the oxidation of SiF_4 to form doped fused silica containing F and depositing said doped fused silica containing F as a layer on the outer surface of a pure fused silica rod or pipe and inserting said rod or pipe into a second pipe of a doped fused silica containing F and then melting and spinning said second pipe having said rod or said first pipe therein into a fiber.

4,161,506

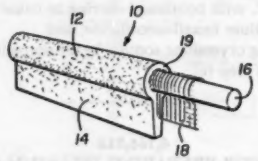
METHOD OF FORMING FINISHING WELTS

Edward M. Danko, Detroit, Mich., assignor to Color Custom Compounding, Inc., Warren, Mich.

Division of Ser. No. 724,815, Sep. 20, 1976, Pat. No. 4,093,773. This application Nov. 9, 1977, Ser. No. 849,915

Int. Cl.[2] B29F *3/10;* B29C *17/00*

U.S. Cl. 264—174 5 Claims



1. The method of making a finishing welt, comprising the steps of:

feeding a composite preform through an essentially key-hole shaped guide passage in a core pin of a cross head extruder, the preform including (a) a flexible reinforcing rod fed through the enlarged head portion of the passage and (b) a fabric scrim surrounding the rod and extending into the smaller tail portion of the passage;

flowing heated plastic material over the composite preform as the preform exits from the core pin within the extruder cross head;

then extruding the plastic material around the preform through an essentially key-hole configured die orifice in general alignment with the core pin passage and thereby forming a welt having a generally cylindrical head and a depending flange, wherein the head includes the flexible reinforcing rod surrounded by a fabric scrim and encased within an outer plastic covering and wherein the scrim extends into the flange for renforcement; and

embossing a pattern onto the outer surface of the welt head by (a) conveying the welt under tension, while the plastic material of the welt is still deformable by virtue of residual heat from extrusion, over the roughened surface of a first roller and embossing at least slightly more than half the outer circumference of the welt head, the welt being wrapped at least partially around the first roller as it comes into contact therewith and as a result being conveyed away from the first roller along an axis different from that along which the welt first engages the first roller, and then (b) conveying the welt under tension over the roughened surface of a second roller and embossing slightly more than half the outer circumference of the welt head, including the previously unembossed portion, and overlapping a portion of the embossment formed by the first roller with the embossment formed by the second roller.

4,161,507

STABILIZED DIAGNOSTIC TEST STRIP FOR THE DETECTION OF UROBILINOGEN

Wolfgang Hirsch, Wunstorf, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

Filed Jun. 21, 1978, Ser. No. 917,585

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1977, 2728236

Int. Cl.[2] G01N *31/22, 33/16*

U.S. Cl. 422—56 4 Claims

1. A stabilized diagnostic test strip for the detection of urobilinogen, preferably in biologic fluids, especially in urine, comprising an absorbent carrier containing a diazonium salt and an acid, and as a stabilizer at least one phosphoric acid triamide of the formula

in which R_1, R_2 and R_3, which may be the same or different, are radicals selected from the group of amino-, mono- and dialkylamino-, mono- and diarylamino-, aralkylamino-, N-methylanilide-, N-piperidide- and N-morpholine.

4,161,508

APPARATUS FOR APPLYING LIQUID SAMPLES TO SURFACES

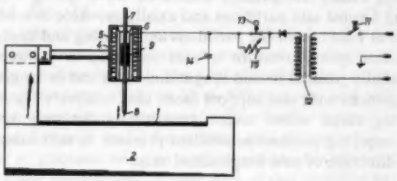
Dieter Jänchen, Muttenz, Switzerland, assignor to Camag Chemie-Erzeugnisse und Adsorptionstechnik AG, Muttenz, Switzerland

Filed Sep. 19, 1977, Ser. No. 834,290

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1976, 2642777

Int. Cl.[2] B01L *3/02;* G01N *1/12, 31/06, 31/08*

U.S. Cl. 422—100 8 Claims



1. In an apparatus for applying at least one liquid sample to a separating surface comprising

electromagnet means having a vertically disposed opening extending therethrough;

pipette means for containing said liquid sample and being located within said vertically disposed opening, said pipette means being responsive to said electromagnet means and being freely movable within said vertically disposed opening; and

energizing means for energizing said electromagnet means so that (a) said pipette means is suspended over said surface in response to the electromagnet means being energized, said suspension of the pipette means being effected only by said energizing means and (b) the pipette means falls under the influence of gravity to said surface in response to the energization of said electromagnet means being reduced so that said liquid sample is applied to said surface.

4,161,509

MONOLITHIC CONVERTER

Hubert H. Nowak, Jackson, Mich., assignor to Tenneco., Inc., Racine, Wis.

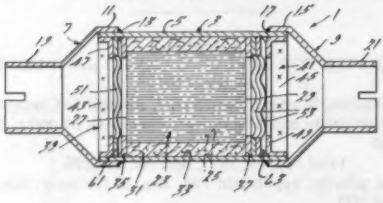
Filed Apr. 14, 1975, Ser. No. 567,578

Int. Cl.[2] B01J *1/14;* F01N *3/08, 3/15*

U.S. Cl. 422—179 11 Claims

1. A catalytic converter for combustion engine exhaust systems comprising a metal housing having a longitudinal axis and having an inlet for unpurified exhaust gas at one end and an outlet for relatively purified gas at the other end, a catalyst element in said housing comprising a gas pervious monolithic refractory substrate containing catalyst material and having support faces at opposite ends that are substantially parallel to each other and substantially normal to said axis, a resilient layer around said substrate and resiliently supporting it radially in said housing, said substrate having a gas inlet surface and a gas outlet surface each extending substantially normal to said longitudinal axis, inlet gas passage means providing a gas flow

passage between said housing inlet and said substrate inlet surface for unpurified gas, outlet gas passage means providing a gas flow passage between said substrate outlet surface and said housing outlet for relatively purified gas, support means contained inside of said housing serving to axially support said catalyst element in position between said inlet and outlet and including transverse partitions and at least one separate and individual relatively flat layer of spring metal washer means inside said housing and separable from and non-integral with



respect to all other parts of said converter and consisting of at least one axially compressed undulated wave spring washer reacting against said partitions and axially movable as a whole relative at least one of the partitions and housing and applying continuous spring pressure to said substrate in a direction substantially parallel to said longitudinal axis and in longitudinal alignment with said support faces, said relatively flat layer of spring metal wsher means constituting the only spring means applying continuous resilient pressure to said substrate in the direction of said longitudinal axis.

4,161,510

REFORMING FURNACE HAVING CERAMIC-COATED TUBES

Alfred J. Edridge, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 537,503, Dec. 30, 1974, abandoned, which is a division of Ser. No. 391,081, Aug. 27, 1973, abandoned, which is a continuation of Ser. No. 240,856, Apr. 3, 1972, abandoned. This application Dec. 18, 1975, Ser. No. 641,791

Int. Cl.[2] B01J *8/06;* **F16L** *9/14*

U.S. Cl. 422—197 **1 Claim**

1. Apparatus for steam reforming of light hydrocarbons which comprises in combination:

a steam reforming furnace including tubes filled with steam reforming catalyst; and

a coating of ceramic, heat reflective material painted on the outer surface of at least a portion of at least one of said tubes exposed to high temperatures during steam reforming, whereby the fissure creep rate in said portion of said tubes is reduced.

4,161,511

PROCESS OF REFINING SODIUM HEXAFLUOROSILICATE

Yoshiro Shiraki, Yamaguchi; Hiroshi Haraoka, and Hiromichi Arai, both of Ube, all of Japan, assignors to Central Glass Company, Limited, Yamaguchi, Japan

Filed Jan. 31, 1978, Ser. No. 873,883

Claims priority, application Japan, Feb. 1, 1977, 52-9284

Int. Cl.[2] C01B *33/10*

U.S. Cl. 423—341 **8 Claims**

1. A process of refining a crude sodium hexafluorosilicate containing gypsum as an impurity, comprising the steps of:

(a) dispersing the crude sodium hexafluorosilicate in an aqueous solution of sodium chloride to form a first slurry and allow the gypsum to dissolve in said solution;

(b) removing at least a portion of the liquid component of said slurry thereby to accomplish the removal of a substantial amount of the dissolved gypsum;

(c) reconstituting an aqueous second slurry of the solid component of said first slurry such that the concentration of Na in the liquid phase of said second slurry is not greater than 80 g/l;

(d) adding a mineral acid to said second slurry so as to give an acid concentration of at least 0.1 N;

(e) maintaining the acidified slurry at temperatures not lower than 80° C. with continued stirring to cause recrystallization of sodium hexafluorosilicate; and

(f) recovering crystalline sodium hexafluorosilicate from the product of step (e).

4,161,512

PROCESS FOR PREPARING TITANIUM CARBIDE

Alexandr G. Merzhanov, Noginsky raion, p/o Chernogolovka, ulitsa Pervaya, 1, kv. 30; Inna P. Borovinskaya, Noginsky raion, p/o Chernogolovka, ulitsa Pervaya, 17/1, kv. 9, both of Moskovskaya oblast; Gennady G. Karjuk, ulitsa D. Korotchenko, 17a, kv. 60, Kiev; Fedor I. Dubovitsky, Vorobievskoe shosse, 2b, kv. 12, Moscow; Valentina K. Prokudina, Noginsky raion, p/o Chernogolovka, ulitsa Pervaya, 16, kv. 12; Viktor I. Ratnikov, Noginsky raion, p/o Chernogolovka, ulitsa Pervaya, 24, kv. 63, both of Moskovskaya oblast; Anatoly V. Bochko, ulitsa Sergema, 42, kv. 12, Kiev; Evgeny I. Moshkovsky, ulitsa Vyshgorodskaya, 76a, kv. 18, Kiev; Semen J. Sharivker, ulitsa Zhadanovskogo, 96, kv. 7, Keiv, and Sergei S. Krizhanovsky, pereulok Minsky, 28, Keiv, all of U.S.S.R.

Filed Jan. 11, 1978, Ser. No. 868,628

Claims priority, application U.S.S.R., Jan. 21, 1977, 2444251

Int. Cl.[2] C01B *31/30*

U.S. Cl. 423—440 **6 Claims**

1. Method of producing titanium carbide, which comprises locally igniting a portion of a mixture consisting of 80–88% by weight of commercial titanium powder and 20–12% by weight of finely divided carbon, thus causing an exothermal reaction of said mixture whereby under the conditions of layer-by-layer combustion the entire mixture is heated to reaction with the formation of gaseous by-products, the process being carried out in an inert refractory porous casing having a porosity of 15–30%, thereby preventing said mixture from scattering upon an intensive cooling thereof and permitting removal of said gaseous products through said porous casing, thus forming titanium carbide of high purity with the combined carbon content approaching the stoichiometric value.

4,161,513

METHOD OF PREPARING TITANATES SUITABLE AS ION-EXCHANGE MATERIAL

Sevald Forberg, Gillerbacken 15, S-124 42 Bandhagen, and Per-Inge Olsson, Mortgatan 11, 4tr, S-133 00 Saltsjobaden, both of Sweden

Filed Dec. 9, 1977, Ser. No. 859,141

Claims priority, application Sweden, Dec. 15, 1976, 7614116

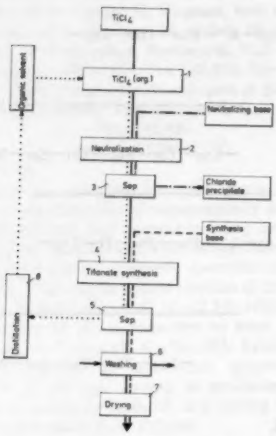
Int. Cl.[2] C01G *23/00*

U.S. Cl. 423—598 **13 Claims**

1. A method of preparing titanates suitable as cation exchange material which comprises dissolving titanium tetrachloride in a water-free or a substantially water-free organic solvent selected from the group consisting of water-free or substantially water-free forms of alcohols, ketone and mixtures thereof;

partially neutralizing hydrochloric acid formed in the titanium tetrachloride solution and removing the chloride by reacting with a base which, in the used solvent, causes the precipitation of not-readily dissolved chloride; separating the precipitated chloride from the solution;

reacting a cation forming base with the neutralized solution to produce a titanate precipitate;



separating the precipitate from the residual solution and recovering the titanate.

4,161,514

COMPOSITION AND METHOD FOR PREPARING SPECIMENS OF MICRO-ORGANISMS FOR MICROSCOPIC EXAMINATION

Dee O. Casey, 281 Maple St., Brevard, N.C. 28712

Continuation-in-part of Ser. No. 655,385, Feb. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 277,909, Oct. 5, 1972, abandoned. This application Feb. 7, 1977, Ser. No. 766,229

Int. Cl.[2] C12K *1/04;* **G01N** *1/00, 1/28, 1/30*

U.S. Cl. 424—3 **15 Claims**

1. A composition for staining micro-organisms to enable viewing by microscope and for immobilizing motile micro-organisms without damage to the structure thereof, which comprises an aqueous solution consisting essentially of water, from 0.025% to 0.125% by weight of hydrogen fluoride and a small amount of malachite green sufficient to provide a pleasing background color so that said micro-organisms stand out clearly.

10. A method for preparing a specimen containing a number of micro-organisms in aqueous suspension for viewing under a microscope which comprises placing one drop of said suspension on a viewing surface, placing in contact with said drop of said suspension one drop of an aqueous solution containing 0.025% to 0.125% by weight hydrogen fluoride and a small amount of malachite green sufficient to provide a plea viewing color to said suspension and permitting said suspension and said solution to combine while quiescent, to stain said micro-organisms and to immobilize motile micro-organisms while maintaining their form and shape.

4,161,515

DOUBLE RECEPTOR FLUORESCENT IMMUNOASSAY

Edwin F. Ullman, Atherton, Calif., assignor to Syva Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 402,693, Oct. 2, 1973, Pat. No. 3,998,943. This application Dec. 17, 1976, Ser. No. 751,838

The portion of the term of this patent subsequent to Dec. 21, 1993, has been disclaimed.

Int. Cl.[2] G01N *21/00, 31/00, 33/16*

U.S. Cl. 424—8 **6 Claims**

1. A method for detecting the presence of an antiligand in a sample comprising:

combining in an aqueous medium (1) said sample; (2) ligand analog-fluorescer, wherein said ligand analog is specifically recognizable by said antiligand, and the ligand analog and fluorescer are linked sufficiently close by a linking group, so that the simultaneous binding of antiligand and antibody to fluorescer is sterically inhibited; and (3) anti-fluorescer;

determining at at least one wavelength the intensity of the fluorescence from said medium related to the emission of said fluorescer or said fluorescer bound to said anti-fluorescer as compared to a standard having a known amount of anti-ligand.

4,161,516

COMPOSITION FOR TREATING AIRWAY DISEASE

John H. Bell, Loughborough, England, assignor to Fisons Limited, London, England

Continuation-in-part of Ser. No. 599,071, Jul. 25, 1975, abandoned. This application Jan. 14, 1977, Ser. No. 759,469

Claims priority, application United Kingdom, Jan. 23, 1976, 2606/76; Jan. 23, 1976, 2608/76

Int. Cl.[2] A61J *3/00;* **A61K** *31/35*

U.S. Cl. 424—14 **16 Claims**

1. A pharmaceutical composition adapted to be fluidized into a gas stream for inhalation treatment of airway disease, said composition being in the form of soft pellets or granules having a diameter of about 30 to 500 microns, said pellets or granules comprising a therapeutically effective proportion of a solid medicament useful for treating said disease, each of said pellets or granules being an agglomeration of individual particles of said medicament, at least 90% of said particles having a diameter less than 10 microns.

4,161,517

PLAQUE INHIBITING COMPOSITION AND METHOD

Austin C. Wagenknecht, deceased, late of Hennepin County, Minn. (by Don A. Wagenknecht, personal representative); George V. Daravingas, Edina, and William E. Koski, Minneapolis, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Nov. 28, 1977, Ser. No. 855,511

Int. Cl.[2] A61K *9/68*

U.S. Cl. 424—48 **18 Claims**

1. A chewing gum comprising:

(a) from about 10% to about 95% by weight of a gum base; and,

(b) from about 0.001% to about 25% by weight of a mixture of an alkyl sulfate salt and a member selected from the group consisting of a stearoyl-2-lactylate salt and a di(2-ethylhexyl)sulfosuccinate salt and mixtures thereof in a weight ratio of from about 1,000:1 to about 1:1,000.

4,161,518

COMPOSITIONS AND METHODS FOR INHIBITING PLAQUE FORMATION

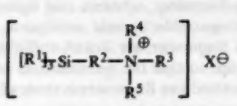
Richard Y. Wen, New Brighton; Linda L. LaFleur, Oakdale; Michael R. Engel, White Bear Lake, and Anthony J. Lucas, Afton, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 29, 1977, Ser. No. 865,707

Int. Cl.[2] A61K *7/18, 7/22*

U.S. Cl. 424—52 **15 Claims**

1. A dentifrice composition which consists essentially of at least one ingredient selected from the group consisting of caries prophylactic agents, soaps, detergents, flavoring agents, sweetening agents and humectants and at least about 0.05% by weight of a quaternary ammonium organosiloxane having the formula



wherein R^1 is an alkoxy group having from 1 to 5 carbon atoms, R^2 is an alkylene group having from 1 to 25 carbon atoms, and R^3, R^4 and R^5 are, individually, alkyl groups of from 1 to 25 carbon atoms, and X is an anion.

4,161,519

PROCESS FOR PREPARING AN ANTIPREGNANCY VACCINE

Gursaran P. Talwar, New Delhi, India, assignor to All India Institute of Medical Sciences, New Delhi, India

Continuation of Ser. No. 544,677, Jan. 28, 1975, abandoned. This application Apr. 21, 1977, Ser. No. 789,455

Int. Cl.[2] A61K *37/38, 39/00*

U.S. Cl. 424—88 **9 Claims**

1. A process for preparing a vaccine for the prevention of pregnancy which comprises:

(a) obtaining chemically pure beta subunit of human chorionic gonadotropin;

(b) reacting said chemically pure beta subunit of human chorionic gonadotropin with rabbit antiovine leuteinizing hormone immunosorbent to obtain a beta subunit of human chorionic gonadotropin preparation which is free of determinants capable of reacting with high affinity with anti leuteinizing hormone sera; and

(c) condensing the thus treated beta subunit of human chorionic gonadotropin preparation with a subject-compatible immunogenic carrier to obtain a vaccine.

4,161,520

METHOD OF TREATING HYPERTENSION

Melville W. Osborne, Somerville, and Michael R. Cohen, West Orange, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 14, 1976, Ser. No. 731,979

Int. Cl.[2] A61K *35/66, 31/35, 31/34*

U.S. Cl. 424—115 **20 Claims**

1. A method for treating hypertension in warm blooded animals with hypertension comprising the oral administration to such warm blooded animals of from less than 0.1 mg/kg/day to about 10 mg/kg/day of a polyether compound with ionophore activity.

14. A method of altering the hemodynamic profile of warm blooded animals suffering from angina to the normal state comprising orally administering to such warm blooded animals from less than 0.1 mg/kg/day to about 10 mg/kg/day of a polyether compound with ionophoric activity sufficient to revert the hemodynamic profile to the normal state.

4,161,521

SOMATOSTATIN ANALOGS

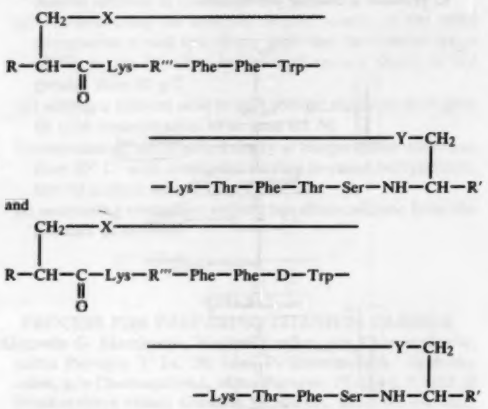
Daniel F. Veber, Ambler; Frederick W. Holly, Glenside; Robert G. Strachan, Warrington; William J. Paleveda, Lansdale; Ruth F. Nutt, Green Lane, and Ralph F. Hirschmann, Blue Bell, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 680,005, Apr. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 603,067, Aug. 8, 1975, abandoned. This application Jun. 14, 1976, Ser. No. 695,348

Int. Cl.[2] A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **37 Claims**

1. The peptides having the structure:



and

wherein:

X is CH_2, S,

SO_2 and $[X]_n$ wherein n=0;

Y is CH_2, S,

SO_2 and $[Y]_n$ wherein n=0;

R is H, NH_2 and R″NH and wherein

R″ is Ala-Gly-, lower acyl containing 2 to 6 carbon atoms or aroyl containing 7 to 21 carbon atoms;

R′ is H and CO_2H; wherein X and Y are not both heteroatoms and when R′ is H, X and Y are not both —CH_2—; and

R‴ is asparagine, alanine or α-aminobutyric acid.

4,161,522

METHOD FOR BLOCKING ALLERGIC RESPONSES

Robert N. Hamburger, La Jolla, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 652,868, Jan. 27, 1976, which is a continuation-in-part of Ser. No. 565,425, Apr. 4, 1975, abandoned. This application Sep. 7, 1978, Ser. No. 940,323

Int. Cl.[2] A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **17 Claims**

1. A method for blocking the mammalian allergic reaction which method comprises administering to a host subject in an effective amount of a polypeptide comprising from 3–10 amino acids in sequence, said sequence selected from a portion of the amino acid sequence 265–537 of the Fc region of Immunoglobulin E, or the polypeptide Asp-Thr-Glu-Ala-Arg, or a pharmacologically acceptable salt or derivative thereof.

4,161,523

ROSAMICIN ESTERS, ACID ADDITION SALTS AND METHODS FOR PRODUCTION THEREOF

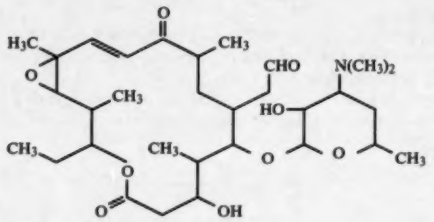
Marvin J. Weinstein; Gerald H. Wagman, both of East Brunswick, and Joseph A. Marquez, Montclair, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 303,883, Nov. 15, 1972, abandoned, which is a continuation-in-part of Ser. No. 4,916, Jan. 22, 1970, abandoned. This application Oct. 21, 1974, Ser. No. 516,338

Int. Cl.[2] A61K *31/71*

U.S. Cl. 424—181 21 Claims

1. A compound selected from the group consisting of rosamicin and the non-toxic pharmaceutically acceptable acid addition salts thereof, said rosamicin being an organic substance having an infrared spectrum substantially as shown in FIG. 1, having a nuclear magnetic spectrum substantially as shown in FIG. 2, having an optical rotation at 25° measured by the D line of sodium of −33.4° (C=0.3% ethanol), having a molecular weight of 381 as measured by mass spectrometry, having an empirical formula $C_{31}H_{51}NO_9$ having an m.p. of 110–114° C., having an ultraviolet spectrum with an $E_{1cm}^{1\%}$=238 at 240 mμ, having an antibacterial spectrum substantially as shown in Table IX, and having a planar structural formula substantially as follows:



6. A method of eliciting an antibacterial response in a mammal having a bacterial infection which comprises administering to said mammal an antibacterially effective quantity of a compound of claim 1.

4,161,524

O-ALKYL-S-N-PROPYL-N-SULFONYL-PHOSPHORIC ACID ESTER AMIDES

Shigeo Kishino; Junichi Saito, both of Tokyo; Akio Kudamatsu; Kozo Shiokawa, both of Kanagawa, and Shinichi Tsuboi, Tokyo, all of Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

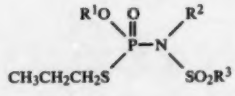
Division of Ser. No. 723,834, Sep. 16, 1976, Pat. No. 4,134,979. This application Jun. 21, 1978, Ser. No. 917,719

Claims priority, application Japan, Sep. 22, 1975, 50/113705

Int. Cl.[2] A01N *9/36*; C07F *9/24*

U.S. Cl. 424—215 9 Claims

1. An O-alkyl-S-n-propyl-N-sulfonylphosphoric acid ester amide of the formula



in which

R^1 is methyl or ethyl,

R^2 is C_1–C_6 alkyl or alkenyl, C_1–C_6 alkyl substituted by aryl, phenyl, C_1–C_6 alkylphenyl, or halophenyl, and

R^3 is C_1–C_6 alkyl, C_1–C_6 alkyl substituted by halogen, phenyl, C_1–C_6 alkylphenyl, C_1–C_6 alkoxyphenyl, halophenyl or nitrophenyl, with the proviso that both R^2 and R^3 are not simultaneously C_1–C_6 alkyl.

2. A method of combating insects, acarids or nematodes, which comprises applying to the insects, acarids, or nematodes, or to a habitat thereof an insecticidally, acaricidally or nematicidally effective amount of a compound according to claim 1.

4,161,525

PROCESS OF TREATING PROLIFERATIVE SKIN DISEASES WITH INDOLE DERIVATIVES

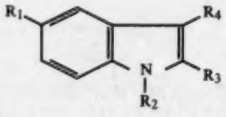
John J. Voorhees, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.

Division of Ser. No. 808,447, Jun. 21, 1977, Pat. No. 4,107,306, which is a division of Ser. No. 643,633, Jan. 5, 1976, Pat. No. 4,034,087, which is a continuation-in-part of Ser. No. 425,065, Dec. 17, 1973, abandoned, which is a continuation-in-part of Ser. No. 324,012, Jan. 16, 1973, abandoned. This application Apr. 17, 1978, Ser. No. 897,063

Int. Cl.[2] A61K *31/56, 31/535, 31/40, 31/405*

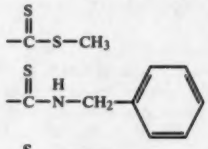
U.S. Cl. 424—240 2 Claims

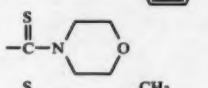
1. A process for alleviating proliferative skin diseases which comprise administering to the afflicted human or animal a composition containing as its active component at least one compound of the formula:

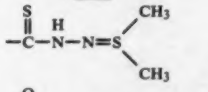


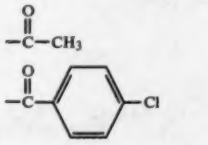
wherein R_1 is hydrogen or methoxy

R_2 is -CH_3

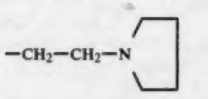






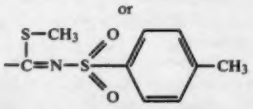


or

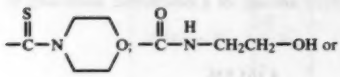


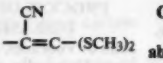
R_3 is hydrogen, methyl, phenyl

or



R_4 is hydrogen, hydroxy





said compounds being in association with a pharmaceutical carrier wherein said active component is present in an amount in the range of about 0.1 to about 15% w/v, which is effective to alleviate a proliferative skin disease.

2. A process in accordance with claim **1** wherein said active component is administered in conjunction with a permissive dosage of a glucocorticoid.

4,161,526

ZINC SALT PREVENTION OR REMOVAL OF DISCOLORATION IN PYRITHIONE, PYRITHIONE SALT AND DIPYRITHIONE COMPOSITIONS

William G. Gorman, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Jul. 20, 1978, Ser. No. 926,293

Int. Cl.[2] **A61K** *31/555, 31/44, 33/30*

U.S. Cl. 424—245 **6 Claims**

1. A white to cream yellow pyrithione, pyrithione salt or dipyrithione composition for application to skin or hair containing from about 0.01 percent to about 1 percent of the zinc salt of an organic carboxylic or inorganic acid, zinc hydroxide or zinc oxide or a mixture thereof effective in preventing or removing discoloration caused by formation of a colored pyrithione, pyrithione salt or dipyrithione contaminant in said composition.

4,161,527

ANTIBIOTIC COMPOSITIONS

Kenzo Ishizuka, Amagasaki; Hiroshi Fujisawa, Toyonaka, and Etsunosuke Noda, Yao, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed Aug. 29, 1977, Ser. No. 828,841

Claims priority, application Japan, Aug. 31, 1976, 51-104582

Int. Cl.[2] **A61K** *31/54*

U.S. Cl. 424—246 **8 Claims**

8. A solid antibiotic composition, which comprises 7β-[2-(2-imino-4-thiazolin-4-yl)acetamido]-3-{1-[2-(N,N-dimethylamino)ethyl]-1H-tetrazol-5-yl}thiomethyl-3-cephem-4-carboxylic acid dihydrochloride hydrate, of which the water content is substantially 1 to 4 mols per mol of 7β-[2-(2-imino-4-thiazolin-4-yl)acetamido]-3-{1-[2-(N,N-dimethylamino)ethyl]-1H-tetrazol-5-yl}-thiomethyl-3-cephem-4-carboxylic acid dihydrochloride moiety, and sodium carbonate, the amount of sodium carbonate being substantially 1 to 2 mols per mol of said hydrate.

4,161,528

1,3-DIPHENYL-2-TRICHLOROMETHYL-IMIDAZOLIDINES

Klaus Thomas, Gau-Algesheim; Walter Ost, Bingen, and Jurgen Curtze, Geisenheim-Johannisberg, all of Fed. Rep. of Germany, assignors to Celamerck GmbH & Co. KG., Ingelheim am Rhein, Fed. Rep. of Germany

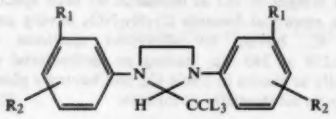
Continuation of Ser. No. 776,365, Mar. 10, 1977, abandoned, which is a continuation of Ser. No. 660,410, Feb. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 573,822, May 2, 1975, abandoned, which is a continuation-in-part of Ser. No. 427,368, Dec. 21, 1973, abandoned. This application Feb. 17, 1978, Ser. No. 878,669

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1972, 2263239; Feb. 28, 1975, 2508715

Int. Cl.[2] **C07D** *233/10;* **A61K** *31/395*

U.S. Cl. 424—273 R **7 Claims**

1. A compound of the formula



wherein

R_1 is halogen, lower alkyl or, when R_2 is 4-fluoro, 4-bromo, 4-iodo or 4-(lower alkyl of more than 1 carbon atom), also hydrogen; and

R_2 is attached to the 4- or 5-position of the phenyl ring and is hydrogen, halogen or lower alkyl.

4,161,529

PHENOXY PHENYL PYRROLIDINE COMPOUNDS, COMPOSITIONS AND METHODS OF USE

Laszlo Beregi, Boulogne; Pierre Hugon, Rueil-Malmaison; Jacques Duhault, Chatou, and Michelle Boulanger, Marly le Roi, all of France, assignors to Science Union et Cie, Societe Francaise de Recherche Medicale, Suresnes, France

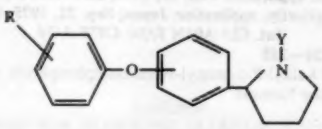
Filed Feb. 14, 1978, Ser. No. 877,601

Claims priority, application United Kingdom, Feb. 25, 1977, 8096/77

Int. Cl.[2] **A61K** *31/40;* **C07D** *207/06*

U.S. Cl. 424—274 **9 Claims**

1. A compound having the formula:



wherein:

—R is selected from the group consisting of hydrogen, halogen, alkyl and alkoxy of 1 to 4 carbon atoms inclusive, and trifluoromethyl;

—Y is selected from the group consisting of hydrogen, saturated and unsaturated hydrocarbon radical of from 1 to 4 carbon atoms inclusive, hydroxyethyl, hydroxypropyl and carboxymethyl; and physiologically tolerable acid addition salts thereof.

9. A method for treating a animal body afflicted with lipid-metabolism disorders comprising the steps of administering an amount of a compound of claim **1** which is effective for the alleviation of the said condition.

4,161,530
PHARMACEUTICAL COMBINATION PREPARATIONS AS HYPNOTICS

Werner P. Koella, Oberwill, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 641,318, Dec. 16, 1975, abandoned. This application Mar. 17, 1978, Ser. No. 887,687

Claims priority, application Switzerland, Jan. 6, 1975, 72/75

Int. Cl.[2] A61K *31/40, 31/135, 31/165, 31/335*

U.S. Cl. 424—274 **15 Claims**

1. A pharmaceutical preparation suitable as hypnotic for inducing and prolonging sleep which contains a mixture of pharmacological active compounds comprising (1) a beta-receptor blocking compound selected from the group consisting of 3-isopropylamino-1-(1-naphthyloxy)-2-propanol, 3-isopropylamino-1-(3-methyl-phenoxy)-2-propanol, 1-(2-allyl-phenoxy)-3-isopropylamino-2-propanol, 1-(4-acetylamino-phenoxy)-3-isopropylamino-2-propanol, 1-(4-indolyloxy)-3-isopropylamino-2-propanol, 3-isopropylamino-1-[4-(2-methoxyethyl)-phenoxy]-2-propanol, 3-isopropylamino-1-[4-(2-methylthioethoxy)-phenoxy]-2-propanol, 1-(9,10-ethano-9,10-dihydro-1-anthryloxy)-3-isopropylamino-2-propanol, 3-isopropylamino-1-[2-(1-pyrryl)-phenoxy]-2-propanol, 1-[2-(3,4-dimethoxyphenyl)-ethylamino]-3-(3-methyl-phenoxy)-2-propanol, 1-isopropylamino-3-(1,2,3,4-tetrahydro-1,4-ethano-5-naphthyloxy)-propanol, 1-tert.-butylamino-3-(1,2,3,4-tetrahydro-2,3-dihydroxy-5-naphthyloxy)-2-propanol, 1-(7-indenyloxy)-3-isopropylamino-2-propanol, 1-(7-indanyloxy)-3-isopropylamino-2-propanol, 1-(5-methyl-8-cumaryloxy)-3-isopropylamino-2-propanol, 4-(3-isopropylamino-2-hydroxy-1-propyloxy)-2-methylindole, 2-tert.-butylamino-1-(7-ethyl-2-benzofuranyloxy)-ethanol and 1-(2-allyloxy-phenoxy)-3-isopropylamino-2-propanol in the form of racemates, optically active antipodes or a non-toxic acid addition salt thereof, which can be used pharmaceutically, and (2) L-tryptophane or a non-toxic salt thereof which can be used pharmaceutically, wherein the ratio of the beta-receptor blocking compound to L-tryptophane, or a non-toxic salt thereof which can be used pharmaceutically is of about 1:5 to about 1:100 by weight and which contains from about 20% to about 100% of active compounds together with an excipient.

4,161,531
DIURETIC AND SALURETIC 5-SULFAMOYLBENZOIC ACID DERIVATIVES CARRYING A HETEROCYCLIC SUBSTITUENT

Dieter Bormann, Kelkheim; Merkel Wulf, Neuenhain, and Roman Muschaweck, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

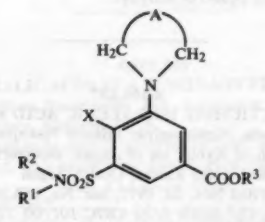
Division of Ser. No. 740,741, Nov. 10, 1976, which is a division of Ser. No. 570,649, Apr. 23, 1975, Pat. No. 4,010,273. This application Jan. 5, 1978, Ser. No. 867,347

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1974, 2419970

Int. Cl.[2] A61K *31/40;* **C07D** *207/04*

U.S. Cl. 424—274 **9 Claims**

1. A 5-sulfamoylbenzoic acid compound of the formula



or a physiologically tolerated salt thereof, wherein R^1, R^2, and R^3 are hydrogen or alkyl of 1 to 4 carbon atoms, X is benzyl, phenylthio, or anilino, in each of which the phenyl ring may be substituted by halogen, CF_3, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms, and A is a $—CH_2—CH_2$-group which may be substituted by halogen or alkyl of 1 to 4 carbon atoms.

8. A diuretically and saluretically active composition containing 0.5 to 100 mg per dosage unit of a compound as defined in claim 1 and a pharmaceutically tolerable carrier therefor.

9. A method of treatment which comprises administering to a patient a diuretically or saluretically effective amount of compound as defined in claim 1.

4,161,532
N-(1'-ETHYL-2'-OXO-5'-PYRROLIDINYLMETHYL) BENZAMIDE COMPOUNDS AND DERIVATIVES, METHOD OF PREPARATION AND PHARMACEUTICAL PREPARATIONS

Gerard Bulteau, Paris; Jacques Acher, Itteville, and Jean C. Monier, Lardy, all of France, assignors to Societe d'Etudes Scientifiques et Industrielles de l'Ile de France, Paris, France

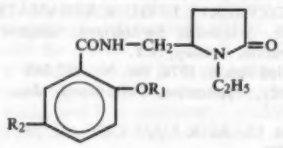
Filed Apr. 14, 1978, Ser. No. 896,126

Claims priority, application France, Apr. 15, 1977, 77 11644

Int. Cl.[2] C07D *207/20;* **A61K** *31/40*

U.S. Cl. 424—274 **10 Claims**

1. A substituted N-(1'ethyl-2'-pyrrolidinylmethyl) benzamide compound of the formula:



(I)

wherein:

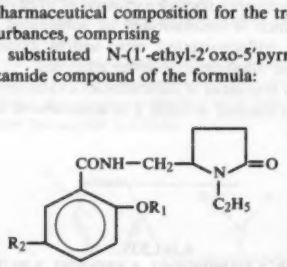
R_1 is hydrogen or methyl and

R_2 is hydrogen or sulfamoyl,

a pharmacologically acceptable organic or inorganic acid addition salt, an alkyl ammonium salt, an N-oxide and an optical isomer thereof.

6. A pharmaceutical composition for the treatment of psychic disturbances, comprising

(a) a substituted N-(1'-ethyl-2'oxo-5'pyrrolidinylmethyl) benzamide compound of the formula:



(I)

wherein

R_1 is hydrogen or methyl and

R_2 is hydrogen or sulfamoyl,

a pharmacologically acceptable organic or inorganic acid addition salt, an alkyl quaternary ammonium salt, an optical isomer thereof; and

(b) a pharmaceutically acceptable support therefor;

(c) said benzamide compound being present in an amount sufficient for the effective treatment of said psychic disturbances.

4,161,533

5-SULFAMOYL-ORTHANILIC ACIDS AND PROCESS FOR THEIR PREPARATION

Karl Sturm, Heidesheim, and Roman Muschaweck, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

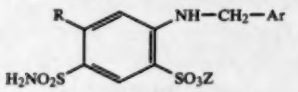
Filed Apr. 26, 1978, Ser. No. 900,135

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1977, 2718871

Int. Cl.[2] A61K *31/34, 31/38;* **C07D** *307/52, 333/20*

U.S. Cl. 424—285 **9 Claims**

1. A compound of the formula



wherein

Ar is furyl;

R is phenoxy, phenylthio, or phenoxy or phenylthio substituted by a chlorine or bromine atom or by methyl or methoxy, and

Z is hydrogen or a physiologically acceptable metal ion, ammonium ion, or substituted ammonium ion.

4,161,534

PROCESS FOR THE PRODUCTION OF NOVEL HYDROXYALKYL DITHIOCARBAMATES

Ernst Schweizer, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

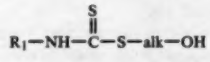
Filed Jan. 6, 1978, Ser. No. 867,649

Claims priority, application Switzerland, Jan. 17, 1977, 528/77

Int. Cl.[2] A61K *31/27;* **C07C** *155/08*

U.S. Cl. 424—300 **8 Claims**

1. A hydroxyalkyl dithiocarbamate of the formula



(I)

wherein R_1 represents a phenyloxyphenyl or phenylaminophenyl radical which is unsubstituted or substituted by lower alkyl, halogen, trifluoromethyl, nitro and/or cyano, and alk represents lower alkylidene or lower alkylene.

8. Method of treatment of helminthoses characterised in that a compound as claimed in claim **1** is administered to a warm-blooded being.

4,161,535

PESTICIDAL 2-ISOPROPYL-4-PHENYL-3-BUTENOIC ACID BENZYL ESTERS

Willy Meyer, Riehen; Jozef Drabek, Oberwil; Saleem Farooq, Aesch; Laurenz Gsell, Fullinsdorf, and Odd Kristiansen, Mohlin, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

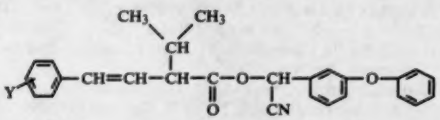
Filed Sep. 26, 1977, Ser. No. 836,635

Claims priority, application Switzerland, Sep. 30, 1976, 12369/76; Mar. 11, 1977, 3095/77

Int. Cl.[2] A01N *9/20;* **A61K** *31/275;* **C07C** *121/75*

U.S. Cl. 424—304 **7 Claims**

1. A compound of the formula



wherein Y is hydrogen, halogen or methyl.

6. A method of combatting animal and plant pests at a locus, which method comprises applying to the locus a pesticidally effective amount of a compound as claimed in claim **1**.

4,161,536

PESTICIDAL ALIPHATIC CARBOXYLATES

Jozef Drabek, Oberwil; Saleem Farooq, Aesch; Laurenz Gsell, Fullinsdorf; Odd Kristiansen, Möhlin, and Willy Meyer, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

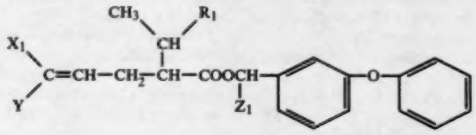
Filed Nov. 7, 1977, Ser. No. 849,150

Claims priority, application Switzerland, Nov. 12, 1976, 14284/76; Sep. 29, 1977, 11910/77

Int. Cl.[2] A01N *9/20, 9/24;* **C07C** *69/65, 121/75*

U.S. Cl. 424—304 **12 Claims**

1. An aliphatic carboxylic acid ester of the formula



wherein

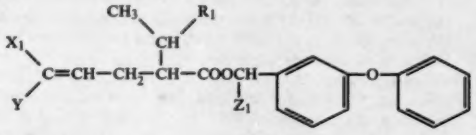
R_1 represents hydrogen or methyl,

X_1 represents halogen,

Y represents halogen or methyl, and

Z represents cyano or ethynyl.

8. A method for combatting insects which comprises applying thereto an insecticidally effective amount of a compound of the formula



wherein

R_1 represents hydrogen or methyl,

X_1 represents halogen,

Y represents halogen or methyl, and

Z represents cyano or ethynyl.

4,161,537

INSECTICIDAL ISOVALERIC ACID ESTERS

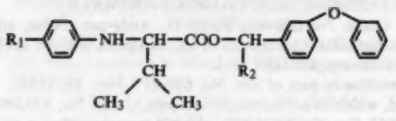
Yoshio Katsuda, Nishinomiya; Minoru Nakajima, and Toshio Fujita, both of Kyoto, all of Japan, assignors to Dainippon Jochugiki Kabushiki Kaisha, Osaka, Japan

Filed Nov. 30, 1977, Ser. No. 856,207

Int. Cl.[2] A01N *9/20;* **C07C** *101/00, 121/75*

U.S. Cl. 424—304 **21 Claims**

1. Isovaleric acid ester derivatives and the optical isomers thereof expressed by the general formula I:

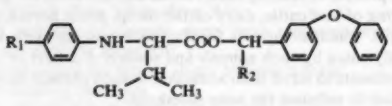


wherein,

R_1 represents hydrogen, methyl group or chlorine atom, and

R_2 represents hydrogen or cyano group.

11. An insecticidal composition comprising a carrier and as its essential ingredient an insecticidally effective amount of an isovaleric acid ester derivative of the general formula:



wherein,

R_1 represents hydrogen, a methyl group, or a chlorine atom and

R_2 represents hydrogen or a cyano group.

4,161,538

SUBSTITUTED PHENYLACETIC ACID DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Atsusuke Terada; Kazuyuki Wachi, and Eiichi Misaka, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

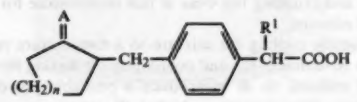
Filed Mar. 10, 1978, Ser. No. 885,527

Claims priority, application Japan, Apr. 5, 1977, 52-38906; Apr. 5, 1977, 52-38907; Jun. 10, 1977, 52-68468

Int. Cl.[2] A61K *31/19;* **C07C** *65/20*

U.S. Cl. 424—317 **32 Claims**

1. A compound having the formula



wherein R^1 represents hydrogen atom or a lower alkyl group, A represents oxo group or hydroxyimino group, n is an integer from 1 to 3 and a nontoxic pharmaceutically acceptable salt thereof.

21. A pharmaceutical composition for treating inflammation in mammals comprising an inert pharmaceutically acceptable carrier and an anti-inflammatory effective amount of a compound of claim **1** or a non-toxic pharmaceutically acceptable salt of said compound.

4,161,539

USE OF MALIC ACID AS A RUMINANT FEED ADDITIVE

Odie T. Stallcup, Fayetteville, Ark., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 786,315, Apr. 11, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,694

Int. Cl.[2] A61K *31/19*

U.S. Cl. 424—317 **11 Claims**

1. A method of improving the growth response in ruminants which comprises orally administering to the ruminant a growth-promoting amount of malic acid.

4,161,540

ANTIANDROGENIC AGENTS AND METHODS FOR THE TREATMENT OF ANDROGEN DEPENDENT DISEASE STATES

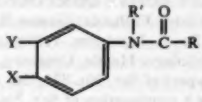
Rudolph O. Neri, Hawthorne, and John G. Topliss, West Caldwell, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 725,822, Sep. 23, 1976, which is a division of Ser. No. 505,116, Sep. 11, 1974, Pat. No. 3,995,060, which is a continuation-in-part of Ser. No. 265,655, Jun. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 146,461, May 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 876,999, Nov. 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 734,854, Jun. 6, 1968, abandoned, which is a continuation-in-part of Ser. No. 573,836, Aug. 22, 1966, abandoned. This application Oct. 3, 1977, Ser. No. 838,606

Int. Cl.[2] A61K *31/165*

U.S. Cl. 424—324 **16 Claims**

1. A method for the treatment of acne which comprises administering to an animal having acne a therapeutically effective quantity for treating acne of a substituted anilide having the structural formula:



or the non-toxic pharmaceutically accceptable salts thereof, wherein X is a member selected from the group consisting of nitro, trifluoromethyl, chloro, bromo and iodo; Y is a member selected from the group consisting of hydrogen, halogen, nitro, lower alkyl, lower alkoxy, lower alkanoyl, polyfluoroloweralkoxy, polyfluoroloweralkyl, and trifluoromethylthio, with the proviso that when Y and R′ are both hydrogen, X is other than iodo; R′ is a member selected from the group consisting of hydrogen and alkyl having less than 5 carbon atoms, and R is cyclopropyl, cyclobutyl or branched chain alkyl having up to 8 carbon atoms.

4,161,541

BENZHYDRYL GUANIDINES

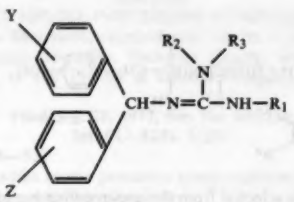
Chris R. Rasmussen, Ambler, Pa., assignor to McNeil Laboratories, Inc., Fort Washington, Pa.

Division of Ser. No. 828,694, Aug. 29, 1977, abandoned. This application Feb. 27, 1978, Ser. No. 881,208

Int. Cl.[2] A61K *31/155;* **C07C** *129/12*

U.S. Cl. 424—326 **9 Claims**

1. A pharmaceutical composition in dosage unit form comprising an effective hypoglycemic amount of a member selected from the group consisting of a benzhydryl guanidine derivative having the formula:



wherein:

R_1 is a member selected from the group consisting of hydrogen and loweralkyl,

R_2 is a member selected from the group consisting of hydrogen and loweralkyl,

R_3 is a member selected from the group consisting of hydrogen, loweralkyl, and cyclopentyl and cyclohexyl,

Y and Z are each a member selected from the group consisting of hydrogen, halo, loweralkyl, preferably methyl, and loweralkyloxy, preferably methoxy and ethoxy;

and the pharmaceutically acceptable acid salts thereof in admixture with a pharmaceutical carrier.

4,161,542

HEART ACTIVE COMPOUNDS

Enar I. Carlsson, Västra Frölunda; Gustav B. R. Samuelsson, Mölnlycke, and Bo T. Lundgren, Frillesäs, all of Sweden, assignors to Aktiebolaget Hassle, Goteborg, Sweden

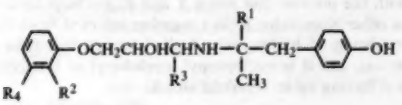
Continuation-in-part of Ser. No. 821,956, Aug. 4, 1977, abandoned, which is a continuation of Ser. No. 610,399, Sep. 4, 1975, abandoned. This application Dec. 27, 1977, Ser. No. 864,514

Claims priority, application Sweden, Jun. 4, 1975, 7506348

Int. Cl.[2] A61K *31/135;* **C07C** *93/06, 87/29, 43/20*

U.S. Cl. 424—330 **74 Claims**

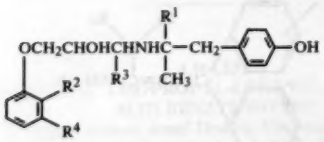
1. A compound of the formula I



I

wherein R^1 is selected from the group consisting of hydrogen and methyl and R^2 is selected from the group consisting of hydrogen, methyl, ethyl, propyl, allyl, methoxy and propargyloxy, R^3 is selected from the group consisting of hydrogen, methyl and ethyl, and R^4 is selected from the group consisting of hydrogen and methyl, provided that R^2 and R^4 are not both hydrogen, or a therapeutically acceptable salt of such a compound.

27. A method of treating cardiovascular disorders by blocking the β-receptors of the heart which comprises administering to mammals in need of said treatment, an amount effective to block said β-receptors of a compound of the general formula I



I

wherein R^1 is selected from the group consisting of hydrogen and methyl, and R^2 is selected from the group consisting of hydrogen, methyl, ethyl, propyl, allyl, methoxy, propargyloxy, R^3 is selected from the group consisting of hydrogen, methyl, and ethyl, and R^4 is selected from the group consisting of hydrogen and methyl, provided that R^2 and R^4 are not both hydrogen, or its therapeutically acceptable acid addition salt.

4,161,543

FEEDING HERBIVOROUS ANIMALS

Elmer F. Glabe, Northbrook; Perry W. Anderson, Niles, and Stergios Laftsidis, Chicago, all of Ill., assignors to Food Technology Products, Chicago, Ill.L

Continuation-in-part of Ser. No. 630,697, Nov. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 484,080, Jun. 28, 1974, Pat. No. 3,925,559, which is a continuation-in-part of Ser. No. 300,736, Oct. 25, 1972, abandoned, which is a continuation-in-part of Ser. No. 158,616, Jun. 30, 1971, abandoned. This application Dec. 8, 1977, Ser. No. 858,660

The portion of the term of this patent subsequent to Dec. 9, 1992, has been disclaimed.

Int. Cl.[2] A23K *1/00*

U.S. Cl. 426—2 **15 Claims**

1. A process of feeding herbivorous animals from the group consisting of beef cattle, dairy cattle, sheep, goats, horses, hogs and fowl which comprises feeding such animals with feeds normally eaten by such animals and sodium diacetate in sufficient amounts to serve as an attractant to such animals for such feeds and to enhance the taste threshold.

4,161,544

PROCESS FOR MAKING A POURABLE MATERIAL FOR CHEWING GUM

Dieter Kaul, Vosskuhlen 6, 2200 Elmshorn, Fed. Rep. of Germany

Filed Mar. 9, 1978, Ser. No. 884,878

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2710579

Int. Cl.[2] A23G *3/30*

U.S. Cl. 426—5 **11 Claims**

1. A process for making a pourable material for chewing gum, which comprises the steps of:

adding to a dry base of chewing gum heated to about 60° to 120° C. dry sugar materials, polysaccharides, natural gums and swelling agents;

mixing and crushing the mass at this temperature for about 1–15 minutes;

subsequently cooling the mixture to a temperature ranging from 30–minus 5° C., and continuing the mixing for about 1–15 minutes, so as to produce a pourable powder for making chewing gum, which will remain pourable at normal temperatures even after storage without forming agglomerates.

4,161,545

HONEY COATED ROASTED NUT PRODUCT AND METHOD FOR MAKING SAME

William M. Green, Box 535, Robersonville, N.C. 27871, and Maurice W. Hoover, 920 Merwin Rd., Raleigh, N.C. 27606

Filed May 16, 1978, Ser. No. 906,663

Int. Cl.[2] A23L *1/36*

U.S. Cl. 426—93 **9 Claims**

1. A process for providing a honey coated roasted nut comprising first coating raw nuts with a mixture comprising about 50–80% by weight of honey and from about 20–50% by weight of water, enrobing the honey coated nuts with a dry mixture containing about 84–92% by weight of sugar and about 8–16% by weight of starch, the particle size of the sugar and starch in said dry mixture being in the range of 0.002 inch to 0.02 inch, and thereafter roasting the nuts.

4,161,546
PROCESS FOR TEXTURIZING PROTEINACEOUS MATERIALS

Cavit Akin, Warrenville, Ill., and Franklin D. Darrington, Munster, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 3, 1977, Ser. No. 821,348
Int. Cl.[2] A23J *3/00*
U.S. Cl. 426—104 9 Claims

1. A process for texturizing an aqueous slurry of single-cell protein materials comprising:

(a) adding to the aqueous slurry of single-cell protein materials a texturizing agent selected from the group consisting of protein isolates, protein concentrates, gelatin, or mixtures thereof, wherein the dry weight ratio of the single-cell protein material to the texturizing agent is in the range of from about 1:9 to about 9:1;

(b) heating the aqueous slurry to a temperature of from about 30° to about 130° C.;

(c) whipping the heated slurry to form a foam;

(d) freezing the foam;

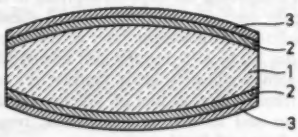
(e) dehydrating the frozen foam; and

(f) heat treating the dehydrated foam at a temperature of from about 130° to about 230° C. for from about 3 to about 120 minutes to yield a water-stable textured product.

4,161,547
METHOD OF PRODUCING ANTIREFLECTIVE COATINGS ON POLYDIETHYLENEGLYCOLDIALLYLCARBONATE, AN OPTICAL PRODUCT MADE BY THE METHOD, AND THE USE OF THE OPTICAL PRODUCT

Gerhard Kienel, Hanau, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH & Co. KG, Cologne, Fed. Rep. of Germany

Filed Dec. 21, 1977, Ser. No. 862,874
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658417
Int. Cl.[2] G02B *5/28*
U.S. Cl. 428—213 6 Claims



4. A three layer antireflective transparent optical body, consisting of a substrate of polydiethyleneglycoldiallylcarbonate to define the first layer; a first coat on the substrate of ZrO_2 having a content of 4 to 15 weight-percent of Al_2O_3 and having a first refractive index to define the second layer; and a second coat of a borosilicate glass superposed on the first coating and containing less than 5 weight-percent of alkali metal oxides and having a second refractive index less than said first refractive index to define the third layer.

4,161,548
MAKING LONG YOLK HARD COOKED EGGS

William Warren, 729 S. Main St., Centerville, Mass. 02632

Filed Jan. 26, 1978, Ser. No. 872,372
Int. Cl.[2] A23L *1/32*
U.S. Cl. 426—299 6 Claims

1. The method of preparing a hard cooked avian egg having an elongated or ovoid yolk and white mixture extending substantially from end to end of the cooked egg, which comprises cooking an egg for a time sufficient to soft boil it such that a thin layer of hard cooked egg white is formed adjacent the shell,

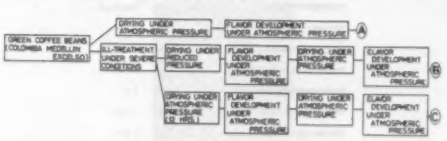
mixing the uncooked internal liquid in the egg,

and completing the cooking of the entire egg.

4,161,549
METHOD OF IMPROVING THE FLAVOR OF PREVIOUSLY DRIED GREEN COFFEE BEANS

Akira Ohno, Nagoya, Japan, assignor to Gallon & Company, Nagoya, Japan

Continuation-in-part of Ser. No. 723,091, Sep. 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 529,547, Dec. 4, 1974, abandoned. This application Dec. 29, 1977, Ser. No. 865,445
Claims priority, application Japan, Dec. 7, 1973, 48-137508; Jul. 19, 1974, 49-83364
Int. Cl.[2] A23F *1/02*
U.S. Cl. 426—460 5 Claims



1. In the processing of green coffee beans wherein said beans are dried and thereafter roasted and said dried beans, which due to storage conditions have suffered marked damage and are no longer characterized by desirable flavor properties, the improvement which comprises treating the beans within a treatment chamber to improve the flavor properties in preparation for said roasting by the essential additional sequential steps of:

(a) tempering the previously dried green coffee beans in a first controlled atmosphere at atmospheric pressure at a first temperature range within a range of about 0 degrees C. to about 26 degrees C. and with a first humidity range within a range of about 45% to about 70% for not less than about 6 hours such that said tempering reduces the water content of the beans below that prior to said tempering;

(b) heating and further humidifying the green beans tempered as in (a) in a second controlled atmosphere under atmospheric pressure for a period of at least 6 hours and not more than 24 hours such that flavor development is effected, at a second temperature higher than any temperature value in said first temperature range without substantially reducing said second temperature, wherein said second temperature ranges from about 10 degrees C. to about 30 degrees C. and a second humidity above any humidity value in said first humidity range without reduction below any humidity value in said first humidity range wherein said second humidity ranges from about 55% to about 90%; and

said step (b) is carried forth in the presence of sufficient circulation of air through the treatment chamber to purge undesirable constituents evolved.

4,161,550
MEAT AROMA PRECURSOR COMPOSITION

Christian A. Bernhardt, Fairfield, and Marvin J. Mohlenkamp, Jr., Colerain Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 21, 1977, Ser. No. 835,126
Int. Cl.[2] A23L *1/231*
U.S. Cl. 426—533 14 Claims

1. A meat-like aroma precursor composition comprising:

A. a hydrogen sulfide precursor;

B. a dimethyl sulfide precursor; and

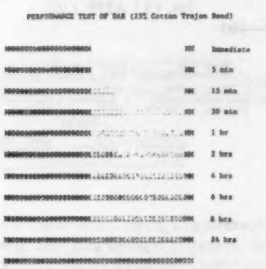
C. an edible proteinaceous material wherein said hydrogen sulfide precursor, said dimethyl sulfide precursor, and said proteinaceous material are present in amounts effective to generate a meat-like aroma upon heating said precursor composition in an aqueous environment.

4,161,551

ADHESIVELY CORRECTABLE TRANSFER MEDIUM WITH DELAYED ALTERATION RESISTANCE CHARACTERISTICS

Victor Barouh, Old Westbury; George Rottmann, Jackson Heights, and Salvatore DeSimone, Brooklyn, all of N.Y., assignors to Eaton Allen Corp., Brooklyn, N.Y.

Filed Mar. 24, 1977, Ser. No. 781,023
Int. Cl.[2] B41J *31/06*
U.S. Cl. 428—539 8 Claims



1. A typewriter ribbon for use with typing bond having an initially adhesively removable ink which ink exhibits a delayed alteration resistance comprising a thin substratum and said ink disposed thereon, said ink including a water soluble salt which in time etches the underlying typing bond.

4,161,552

METHOD FOR MAKING COMMINUTED MEATS AND EXTENDERS

Nicholas Melachouris, White Plains, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 12, 1978, Ser. No. 868,954
Int. Cl.[2] A23C *21/00*
U.S. Cl. 426—646 8 Claims

1. A process for extending comminuted meat which comprises adding thereto a bindingly effective amount of partially soluble modified whey solids derived as a precipitate from a process selected from the group consisting of (1) adding a divalent metal ion to a cheese whey solution and adjusting the pH to a value between about 6 and about 8.0 to cause precipitation of the modified whey solids and (2) adjusting the pH of a cheese whey solution containing at least 20% acid cheese whey to a value of between about 6.0 and about 8.0 to cause precipitation of the modified whey solids said modified whey solids comprising about 23–54% lactose, about 24–60% minerals, and about 15–27% protein by weight, wherein said minerals comprise from about 6% to about 8% phosphorous, about 6 to about 12% calcium and about 1.3 to 1.5% sodium.

4,161,553

ALUMINUM BRAZING SHEET

William D. Vernam, New Kensington, and Joseph W. Evancho, Murrysville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 854,799, Nov. 25, 1977, Pat. No. 4,098,957. This application Jun. 30, 1978, Ser. No. 921,047
The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.
Int. Cl.[2] B32B *15/20*
U.S. Cl. 428—654 4 Claims

1. An aluminum brazing sheet comprising:

(a) a core of an aluminum alloy;

(b) a first layer of an aluminum brazing alloy consisting essentially of 0 to 2.5 wt.% Mg, 5.0 to 13.0 wt.% Si, 0.8 wt.% Fe max., 0.3 wt.% Cu max., 0.3 wt.% Zn max. and 0.3 wt.% Mn max., the remainder aluminum, provided on at least one side of said core to form a composite; and

(c) a second layer of an aluminum alloy clad on at least one of the brazing layer and the core, said second layer consisting essentially of 0.5 to 1.2 wt.% Mg, 1.2 to 1.8 wt.% Si, 0.2 wt.% Cu max., 0.7 wt.% Fe max., 1.5 wt.% Mn max. the remainder aluminum, said alloy in said second layer having a melting point substantially equivalent to the melting point of said brazing layer.

4,161,554

METHOD FOR PREVENTING POLYMERS FORMATION IN STYRENE STORAGE CONTAINERS

John K. Ward, and Johnny B. Gardner, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 28, 1978, Ser. No. 901,170
Int. Cl.[2] B65D *87/34, 81/24*
U.S. Cl. 427—239 6 Claims

1. A method for preventing polymer formation on the surfaces above the vapor space in storage tanks containing polymerizable alkenyl aromatic monomers which comprises covering said surfaces with a protective coating material, selected from the group consisting of epoxy resin-containing and inorganic silicate-containing coatings, which contains an amount of from about 0.1% to about 40% by weight based on total solids of leachable polymerization inhibitor for said monomer.

4,161,555

FLAME SPRAYING PROCESS FOR MATERIALS REQUIRING FUSION

Theodore C. Appleman, Mansfield, Ohio, assignor to Eastside Machine & Welding, Inc., Ashland, Ohio

Filed Apr. 6, 1978, Ser. No. 893,875
Int. Cl.[2] B05D *1/08*
U.S. Cl. 427—333 4 Claims

1. In the flame spray process in which a heat-fusible self-fluxing material is heated in a heating zone to at least heat-softened condition and propelled in said condition out of said zone in finely divided form onto an obscure substrate surface of a base article to form a coating of said material on said surface, the improvement comprising the steps of: applying to said coating on said obscure surface a layer of soluble silicate solution comprising solids with a weight ratio of the silica to alkali content of from 2.0 to 3.75; heating said coated surface with said layer of soluble silicate solution thereon to a temperature sufficient to form a siliceous film on said coating and to fuse said coating to said surface; and thereafter, removing said siliceous film from said fused coating.

4,161,556

PROTECTIVE COATING FOR GLASS SUBSTRATE

William M. Lenard, Temperance, Mich., and Lynn J. Taylor, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 558,200, Mar. 13, 1975, abandoned. This application Nov. 21, 1977, Ser. No. 853,056
Int. Cl.[2] C08F *8/00*
U.S. Cl. 427—385 A 5 Claims

1. A process for forming a protective film on the surface of a glass container which comprises;

applying a polymeric crosslinkable coating composition to the glass substrate container, the coating composition consisting of 90 to 99.99% by weight of a rubbery thermoplastic organic polymer and 10 to 0.01% by weight of a peroxidic organic compound, said polymer being an elastomeric organic polymer having an ultimate elongation of at least 100% and being crosslinkable, and said peroxidic organic compound possessing at least one oxygen-oxygen bond,

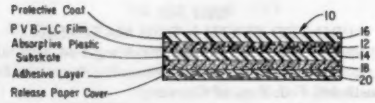
and energizing the polymeric composition in situ on the container surface so as to crosslink the composition and form a protective polymeric film having a thickness of at least 0.002 inch.

4,161,557

POLYVINYL BUTYRAL-LIQUID CRYSTAL FILM-FORMING COMPOSITION AND FILM

Fred K. Suzuki, Arlington Heights, and Thomas W. Davison, Streamwood, both of Ill., assignors to Liquid Crystal Products, Inc., Arlington Heights, Ill.

Filed Mar. 23, 1978, Ser. No. 889,285
Int. Cl.[2] B44F *1/00*
U.S. Cl. 428—1 25 Claims



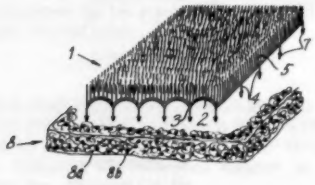
1. In a composition of matter including a mixture of a polyvinyl butyral film-forming polymer and a cholesteric liquid crystalline phase material, said mixture being adapted for forming a film comprising a matrix of said polymer having said material dispersed therein, which film provides a visible response to the application of energy, the improvement which comprises a member selected from the group consisting of oil-modified alkyd-type polymeric plasticizing resins and castor oil intimately mixed with said polymer and said material, thereby to provide a composition which when in the form of said film exhibits accentuated intensity and contrast of visible light waves reflected by said material.

4,161,558

FLEXIBLE AND PERMEABLE GROUND COVERING STRUCTURE, PARTICULARLY FOR SPORTING USES

Jacques L. A. See, Deauville, France, assignor to Royalty S.A., Luxembourg, Luxembourg

Filed Apr. 22, 1977, Ser. No. 789,979
Claims priority, application France, Apr. 26, 1976, 76 12252
Int. Cl.[2] A01N *3/00*
U.S. Cl. 428—17 8 Claims



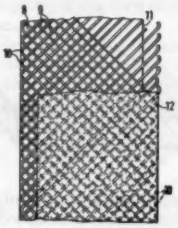
1. Ground covering structure comprising in combination a porous and resilient underlayer made of synthetic material comprising loose mesh felt or open-pored foamed synthetic resin, means for anchoring said underlayer onto the ground, and an upper element formed with a succession of adjacent vault forming elements having holes or slots through which water may flow and having a concavity turned towards the underlayer, said vault forming elements being provided with means for connection with said porous and resilient underlayer, the top of said vault forming elements having shags or filaments with a free end, said free ends of said shags or filaments all ending substantially in the same plane.

4,161,559

REINFORCED WEBS OF FILM

Frank Bosse, Tecklenburg, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Feb. 1, 1978, Ser. No. 874,156
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1977, 2707584
Int. Cl.[2] B32B *5/12*
U.S. Cl. 428—110 2 Claims



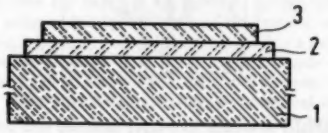
1. In a layer-reinforced web of film of the type having a layer of intersecting tapes positioned between two webs of film, the improvement wherein the layer of intersecting tapes has longitudinal edges defined by points of inversion of the tapes and wherein the webs are superimposed with the longitudinal axes of the webs axially off-set from each other so that the longitudinal edges of the layer of intersecting tapes are covered by only one of the two webs of film.

4,161,560

METHOD OF PRODUCING ANTIREFLECTIVE COATINGS ON ACRYLIC GLASSES, OPTICAL BODIES PRODUCED BY THIS METHOD AND THE USE OF SUCH OPTICAL BODIES

Gerhard Kienel, Hanau, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH & Co. KG, Cologne, Fed. Rep. of Germany

Filed Dec. 21, 1977, Ser. No. 862,872
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658418
Int. Cl.[2] G02B *5/28*
U.S. Cl. 428—213 7 Claims

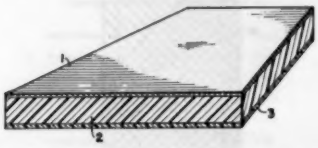


4. A three layer antireflective transparent optical body, comprising: a substrate composed of an acrylate, polymethylmethacrylate to define the first layer; a first coating on the substrate composed of an oxide mixture of substantially ZrO_2 having a content of 4 to 15 weight-percent of Al_2O_3 and having a first refractive index to define the second layer; and a second coating of a borosilicate glass superposed on the first coating and containing less than 5 weight-percent of alkali metal oxides and having a second refractive index less than said first refractive index to define the third layer.

4,161,561
MULTILAYER PLATE

Hans-Dietrich Krug, Heidelberg, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Feb. 23, 1978, Ser. No. 880,824
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1977, 2709644
Int. Cl.[2] B32B *3/26*
U.S. Cl. 428—213 5 Claims



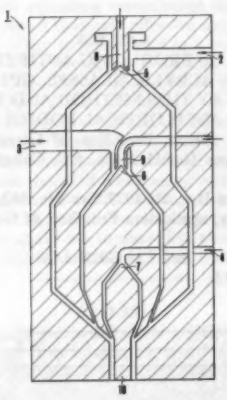
1. A multilayer plate which is capable of being shaped comprising: a central foam sheet of a closed cell, cross-linked polyolefin, a sheet of metal capable of being shaped without wrinkling covering one surface of the polyolefin sheet, and a sheet of hard plastic capable of being shaped without wrinkling covering the other surface of the polyolefin sheet.

5. A multilayer plate as in claim 1, wherein the covering sheets are at least about 0.4 mm thick.

4,161,562
BIAXIALLY STRETCHED FIVE-LAYER FILM FOR PACKAGING FOOD

Shinsuke Yoshikawa; Nobuyuki Hisazumi, and Masataka Yamamoto, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1977, Ser. No. 862,135
Claims priority, application Japan, Dec. 29, 1976, 51-159068
Int. Cl.[2] B32B *7/02*
U.S. Cl. 428—215 8 Claims



1. A biaxially stretched five-layer laminate film comprising: a first layer of an ionomer, an olefin homopolymer, an olefin copolymer or mixture of an olefin homopolymer with an olefin copolymer and having a thickness in the range of from 7 to 25μ; a fifth layer of an ionomer and having a thickness in the range of from 20 to 50μ; a second layer of an ethylene copolymer with a crystal-melting temperature 5° to 30° C. lower than that of the ionomer of said first or the ionomer of the fifth layer and having a thickness in the range of from 0.2 to 3μ; a third layer of a vinylidene chloride copolymer and having a thickness in the range of from 5 to 15μ; and a fourth layer of an ethylene copolymer with a crystal-melting point 5° to 30° C. lower than that of the ionomer of said first or fifth layer and having a thickness in the range of from 0.2 to 3μ, the ratio of the thickness of said first layer to that of the fifth layer being in the range of from 0.4 to 0.6 and the total thickness of the film being in the range of from 35 to 90μ.

4,161,563
PRINTED TEXTILE WEB MATERIAL

Gerhard Metzger, Haibach b. Aschaffenburg, Fed. Rep. of Germany, assignor to Transfertex Thermodruck-system GmbH, Kleinostheim, Fed. Rep. of Germany

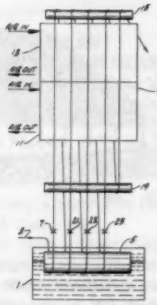
Division of Ser. No. 779,301, Mar. 21, 1977. This application Mar. 20, 1978, Ser. No. 887,923
Int. Cl.[2] B32B *29/02*
U.S. Cl. 428—233 6 Claims

1. A textile web material comprising a roll of textile, said textile having a heat-transfer printed face and an unprinted face, and a roll of a backing web, wherein said unprinted textile face is bonded by a heat-activatable adhesive to said backing web, whereby said material when unrolled provides a heat applied textile wall covering, and said textile can be peeled from said backing web with the covering applied to the wall.

4,161,564
COATING FORMULATION, METHOD, AND COATED SUBSTRATE

Thomas J. Legbandt, Long Beach, Calif., assignor to La Barge, Inc., St. Louis, Mo.

Division of Ser. No. 612,292, Sep. 11, 1975, abandoned. This application Feb. 28, 1977, Ser. No. 772,854
Int. Cl.[2] H01B *7/18, 7/20*
U.S. Cl. 428—381 4 Claims



1. An insulated conductor assembly comprising a conductor, a polyimide insulative cover surrounding said conductor, and over said cover a color coding topcoating comprising a poly(1,3-imidazolidine-2,4,5-trione) polymer, a coloring agent compatible with said imidazolidine-trione polymer, and a free radical scavenger in a proportion sufficient to inhibit cleavage and cross-linking of said imidazolidine-trione polymer by action of oxygen thereon.

4,161,565

PLASTICIZER CONTAINING POLYVINYLBUTYRAL SHEETS HAVING A REDUCED ADHESION TO GLASS

Hans D. Hermann, Bad Soden am Taunus, and Joachim Ebigt, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 12, 1977, Ser. No. 841,394

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646280

Int. Cl.[2] C08K 5/17

U.S. Cl. 428—437 5 Claims

1. A glass laminate comprising at least two panes of glass adherent to a plastic interlayer, said interlayer being a plasticized polyvinylbutyral containing an adhesion-reducing amount of a betain.

4,161,566

AQUEOUS DISPERSE COMPOSITIONS CONTAINING CLAY AND OLEAGINOUS FILM-FORMING MATERIALS

William A. Higgins, Gates Mills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 846,062, Oct. 27, 1977, abandoned. This application Jun. 22, 1978, Ser. No. 918,008

Int. Cl.[2] C23F 11/16; C10M 7/38, 7/46

U.S. Cl. 428—454 54 Claims

1. An aqueous disperse composition, capable of irreversibly forming a coherent film, comprising (I) an internal phase comprising at least one film-forming, non-asphaltic, oleaginous material (A) and (II) an external phase comprising a clay-thickened water slurry (B-1) having a pH in the range of about 6 to abut 9, said slurry containing, in addition to water and at least one clay (B-2), at least one flocculating agent (C).

42. A method for preparing an aqueous disperse composition, capable of irreversibly forming a coherent film, which comprises the steps of:

I hydrating a thickening amount of at least one clay (B-2) to form an aqueous slurry (B-1);

II treating the aqueous surry (B-1) with at least one flocculating agent (C) to form a treated aqueous clay slurry or treated augmented aqueous clay slurry;

III reacting at least one carboxylic acid (D) with at least one overbased salt of an organic acid (E) to form a film-forming oleaginous material (A); and

IV combining the oleaginous material with the aqueous clay slurry (B-1) to form a disperse composition having the oleaginous material (A) or material (F) comprising the internal phase and the aqueous clay slurry (B-1) comprising the external phase.

4,161,567

PANELS FOR INDUSTRIAL DRYERS AND OTHER HEATED ENCLOSURES HAVING STAINLESS STEEL END STRUCTURAL SHEET ELEMENTS

Lloyd F. Sturgeon, Oreland, Pa., assignor to Proctor & Schwartz, Inc., Philadelphia, Pa.

Filed Sep. 12, 1977, Ser. No. 832,423

Int. Cl.[2] B32B 15/18; E04C 2/08

U.S. Cl. 428—594 8 Claims

1. A structural heat-insulation panel for high temperature industrial dryers and such other heated enclosures comprising

inner and outer opposed metallic sheets in generally parallel, spaced-apart planes, one of said sheets being exposed to higher temperature than the other sheet, said sheets defining a space therebetween;

insulation means in said space;

end structural sheet elements connecting said inner and outer sheets together and enclosing said space;

said end sheet elements having sufficient strength to act as load bearing members between the inner and outer sheets;

said end sheet elements being of low heat conductivity stainless steel.

3. A structural heat-insulation panel for high temperature industrial dryers and such other heated enclosures comprising

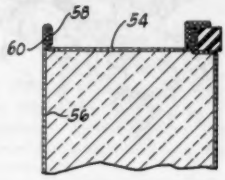
inner and outer opposed metallic sheets in generally parallel, spaced-apart planes, one of said sheets being exposed to higher temperature than the other sheet, said sheets defining a space therebetween;

insulation means in said space;

end structural sheet elements connecting said inner and outer sheets together along lines of connection and enclosing said space;

said end sheet elements having sufficient strength to act as load bearing members between the inner and outer sheets and being of low heat conductivity stainless steel;

said end sheet elements or panels or both being embossed



along said lines of connection to reduce the heat flow between the inner and outer panels.

5. A structural heat-insulation panel for high temperature industrial dryers and such other heated enclosures comprising

inner and outer opposed metallic sheets in generally parallel, spaced-apart planes, one of said sheets being exposed to higher temperature than the other sheet, said sheets defining a space therebetween;

insulation means in said space;

end structural sheet elements connecting said inner and outer sheets together along lines of connection and enclosing said space;

said end sheet elements having sufficient strength to act as load bearing members between the inner and outer sheets and being of low heat conductivity stainless steel;

said outer sheet being painted on its outer surface with a heat emissive paint.

4,161,568

BATTERY HOLDER

John Lund, Reston, Va., assignor to Schonstedt Instrument Company, Reston, Va.

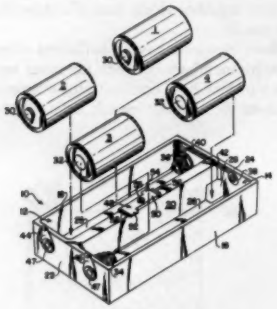
Filed Jan. 11, 1978, Ser. No. 868,721

Int. Cl.[2] H01M 2/10

U.S. Cl. 429—99 2 Claims

1. A holder for batteries of the type having terminals of opposite polarity at opposite ends of the battery, said holder comprising a generally rectangular tray having a pair of parallel compartments, each with a bottom wall, a pair of parallel side walls, a pair of parallel end walls, and an open top, one of said side walls separating said compartments and being common to both compartments, each compartment being dimensioned to receive a pair of said batteries in a series between its end walls and having contact means inside its end walls for engaging adjacent battery terminals, the contact means at one end wall of one compartment and the opposite end wall of the other compartment being spring biased to urge the batteries of each compartment into engagement with one another, means interconnecting the contact means at one end of one compartment with the contact means at the same end of the other compartment so that all of said batteries may be connected in a series circuit, each compartment being dimensioned to permit the batteries therein to move somewhat under mechanical shock forces while being held in engagement with one another

by the bias of the associated spring biased contact means, and retainer means projecting from said common side wall laterally over one of said batteries in each compartment that engages the spring biased contact means of the compartment, but not over an adjacent battery of that compartment, whereby said one battery in each compartment, but not the adjacent battery in that compartment, is held against removal from its normal position in that compartment through the open top of that compartment, and whereby said one battery in each compartment can be shifted in its compartment to the normal position of the adjacent battery in that compartment for removal from that compartment after the adjacent battery therein has been removed, said retainer means comprising a single piece that is substantially Z-shaped in the plane of the open tops of the compartments and that has a stem centrally mounted on said common side wall and a pair of branches projecting oppositely over said one battery in each of said compartments, respectively.



4,161,569

COMPOSITE ELECTRODE FOR STORAGE BATTERIES, ACCUMULATORS AND THE LIKE

Peter Faber, Karlstein, Fed. Rep. of Germany, assignor to Rheinisch-Westfalisches Elektrizitatswerk Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Mar. 10, 1978, Ser. No. 885,184

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1977, 2710907

Int. Cl.[2] H01M *4/72*

U.S. Cl. 429—234 **9 Claims**

1. A composite electrode for storage batteries and the like, comprising:

a metal support provided with a multiplicity of throughgoing openings, respective synthetic-resin layers constituted as openwork sheets and flanking said support, said synthetic-resin layers bending toward one another into said openings and being directly fused together through the openings in said support and at points within said openings, an active mass received in the openwork of at least one of said synthetic-resin layers.

4,161,570

PROCESS FOR THE PRODUCTION OF RADIATION CURABLE COATING COMPOSITIONS CONTAINING MICROCAPSULES

Yu-Sun Lee, Parma, Ohio, and Dale R. Shackle, Scottsboro, Ala., assignors to The Mead Corporation, Dayton, Ohio

Filed Apr. 29, 1977, Ser. No. 792,326

Int. Cl.[2] C08J *9/32*

U.S. Cl. 521—53 **14 Claims**

1. A process for the preparation of a radiation curable coating composition for use in the manufacture of carbonless copy paper, said coating composition being capable of being set to a solid without the application of heat, said radiation curable coating composition containing microcapsules comprising the steps of:

(a) providing a dispersion of substantially discrete microcapsules in a continuous phase, said continuous phase comprising a liquid volatile solvent, said microcapsules containing a solution of chromogenic material, said microcapsules being impermeable to said solution of chromogenic material;

(b) providing a liquid radiation curable suspending medium, said liquid radiation curable suspending medium comprising one or more ethylenically unsaturated organic compounds having at least one terminal ethylenic group per molecule, said radiation curable suspending medium being polymerizable by ultraviolet or ionizing radiation to a solid resin;

(c) mixing said dispersion of substantially discrete microcapsules in said continuous phase and said liquid radiation curable suspending medium with turbulent agitation to form an intimate mixture of said dispersion of microcapsules and said liquid radiation curable suspending medium said mixing taking place without displacement of said solution of chromogenic material from said microcapsules; and

(d) applying heat and vacuum to said mixture, while maintaining said agitation, until said liquid volatile solvent is substantially removed from said mixture to form a dispersion of substantially discrete microcapsules in said liquid radiation curable suspending medium, said heat and vacuum being applied without displacement of said solution of chromogenic material from said microcapsules, said heat being applied to maintain said mixture at a temperature above the boiling point of said volatile solvent at said vacuum.

4,161,571

PROCESS FOR PRODUCTION OF THE MALEIC ANHYDRIDE ADDUCT OF A LIQUID POLYMER

Seimei Yasui, Takarazuka, and Takao Oshima, Sonehigashi, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 733,914, Oct. 19, 1976, Pat. No. 4,080,493. This application Oct. 18, 1977, Ser. No. 843,311

Int. Cl.[2] C08F *8/46*

U.S. Cl. 526—90 **16 Claims**

1. A process for the production of the maleic anhydride adducts of a liquid polymer having a maleic anhydride addition amount of 2 to 70% by weight, which comprises reacting a liquid polymer having a molecular weight of 150 to 5,000 and a viscosity of 2 to 50,000 centipoise at 30° C., said liquid polymer being selected from the group consisting of liquid polybutadienes, liquid polyisoprenes and liquid copolymers comprising units of butadiene or isoprene and units of at least one

compound selected from the group consisting of other diolefins, olefins and aromatic vinyl compounds, with maleic anhydride in the presence of at least one compound, as a gelatin inhibitor, selected from the group consisting of:

(a) organic salts of iron, organic complexes of iron, chelate compounds of iron and inorganic compounds of iron;

(b) chlorides, bromides and iodides of the elements belonging to Groups (III), (IV), (V) or (VI) of the Periodic Table, and ether complexes, ester complexes and aldehyde complexes thereof; and

(c) alkyl metal halides of the formula:

$$R_nM'Y_{m-n}$$

wherein M' is a metal belonging to Group (III) or (IV) of the Periodic Table, R is alkyl having 1 to 8 carbon atoms, Y is chlorine, bromine or iodine, m is an atomic valence of the metal M', and n is a positive integer smaller than m.

4,161,572

CURABLE DIALLYL PHTHALATE COMPOUNDS AND PROCESS FOR PRODUCING SAME

Kazuya Yonezawa; Hisao Furukawa, and Masaaki Azuma, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 24, 1978, Ser. No. 936,378

Claims priority, application Japan, Aug. 29, 1977, 52-103902

Int. Cl.[2] C08F *8/18, 8/32, 8/34, 8/00*

U.S. Cl. 525—100 **1 Claim**

1. A process for producing curable diallyl phthalate compound wherein diallyl phthalate monomer or diallyl phthalate prepolymer having a molecular weight of 20,000 or less, is reacted with a hydrosilane compound represented by the formula:

$$\begin{array}{l} (R_1)_a \\ | \\ H \cdot Si \quad X_{3-a} \end{array}$$

wherein R_1 is a monovalent hydrocarbon group having 1 to 10 carbon atoms; X is a group selected from the group consisting of halogen, alkoxy, acyloxy, aminoxy, phenoxy, thioalkoxy and amino groups; and "a" is an integer 0, 1 or 2; at a temperature of between 50° and 150° C.

4,161,573

PROCESS FOR MAKING POLYSTYRENE

Jeffrey A. Gunsher, Midland; Joseph L. Garner, Sanford, both of Mich., and Conrad O. M. Miller, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 715,585, Aug. 18, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 818,686

Int. Cl.[2] C08F *112/08*

U.S. Cl. 526—64 **21 Claims**

1. A continuous process for making a polystyrene having a $\overline{M}_w$ between about 1,000 and about 50,000 and a $\overline{M}_w/\overline{M}_n$ ratio of less than about 8 comprising staged contacting of a solution of styrene monomer in a first inert organic diluent with a cation generator, in 2 or more stages, under substantially isothermal conditions in each stage, at a temperature between about 0° C. and about 120° C. in a manner such that said styrene monomer, prior to the final contact stage, is always present in said staged contacting in greater than a stoichiometric amount with respect to said cation generator.

4,161,574

PROPYLENE-TERPOLYMERS

Helmut Strametz, and Kurt Rust, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 22, 1977, Ser. No. 826,711

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1976, 2637990

Int. Cl.[2] C08F *4/64, 210/08*

U.S. Cl. 526—159 **1 Claim**

1. A process for the preparation of a propylene terpolymer consisting by weight of 93.2 to 99.0% propylene units, 0.5 to 1.9% ethylene units and 0.5 to 4.9% butene-(1) units which comprises copolymerizing propylene, ethylene and butene-(1) in an inert diluent, liquid propylene or in the gaseous phase in the presence of a mixed catalyst consisting of a $TiCl_3$-containing compound and an activator, and maintaining the weight ratio of ethylene to butene-(1) smaller than 1:1 to obtain said terpolymer.

4,161,575

CATALYST FOR EPOXY POWDER COATINGS

John P. Seymour, Marcus Hook; Rocco L. Mascioli, Media; Burton D. Beitchman, Springfield, and Philip J. Zaluska, Schnecksville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 12, 1978, Ser. No. 950,907

Int. Cl.[2] C08G *59/68*

U.S. Cl. 528—90 **3 Claims**

1. In a process for curing a finely divided 1-2-epoxy resin having a lower softening point of not less than 40° C. by heating said epoxy resin to an elevated temperature in the presence of a catalyst, the improvement which comprises heating said epoxy resin in the presence of a triethylene diamine salt of thiocyanic acid.

4,161,576

CONTROL OF PROCEDURES FOR FORMATION OF WATER-IMMISCIBLE THERMOSETTING PHENOL-FORMALDEHYDE RESINS

Ramesh C. Vasishth, Delta, Canada, assignor to Cor Tech Research Ltd., Richmond, Canada

Division of Ser. No. 779,621, Mar. 21, 1977. This application Nov. 29, 1977, Ser. No. 855,738

Int. Cl.[2] C08G *8/10*

U.S. Cl. 528—139 **7 Claims**

1. A process for the production of a water-immiscible thermosetting phenol-formaldehyde resin characterized by a large proportion of the linkages between benzene rings being benzyl ether linkages located ortho to the phenolic hydroxyl group, by reaction of formaldehyde with phenol at a mole ratio of at least 1:1 in an essentially aqueous reaction medium containing at least one water-soluble metal carboxylate catalyst for the reaction, said catalyst having the formula $(C_nH_{2n+1}COO)_xM$ where n is an integer from 0 to 10, x is greater than 1 and M is a metal having an atomic number of from 21 to 30, which comprises conducting exothermic methylolation of phenol by formaldehyde at an elevated temperature in excess of about 60° C., thereafter conducting polymerization of the methylolated phenol by heating the reaction medium resulting from the methylolation reaction at a temperature in excess of about 90° C. for a time insufficient to cause separation of a water-immiscible resin phase from the aqueous phase at that temperature, cooling the reaction medium to cause separation of a low viscosity water-immiscible resin phase from the aqueous phase, said low viscosity resin phase being characterized by a large proportion of the linkages between benzene rings being benzyl ether linkages located ortho to the phenolic hydroxyl groups, recovering the low viscosity resin phase from the aqueous phase, heating said recovered low viscosity resin at a temperature below its thermosetting temperature for a sufficient time to increase the viscosity thereof to a desired higher value, and

recovering the higher viscosity thermosetting phenolformaldehyde resin so formed.

4,161,577

CATIONIC DYEABLE COPOLYESTERS

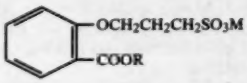
John A. Price, Swarthmore, Pa., and Hugo Stange, Princeton, N.J., assignors to Avtex Fibers Inc., Valley Forge, Pa.

Continuation-in-part of Ser. No. 43,600, Jun. 4, 1970, abandoned, which is a continuation-in-part of Ser. No. 855,033, Sep. 3, 1969, abandoned. This application Nov. 24, 1972, Ser. No. 309,274

Int. Cl.[2] C08G *63/66, 63/68*

U.S. Cl. 528—173 **3 Claims**

1. A fiber-forming copolyester resin comprising the condensation polymerization product of terephthalic acid or its lower dialkyl ester, an aliphatic glycol and a substituted aromatic acid ester represented by the



where R is a lower alkyl radical having 1 to 4 carbon atoms and M is an alkali metal selected from the group consisting of sodium, potassium and lithium and the carboxylate group is in the ortho position with respect to the metal propoxy sulfonate group, said substituted aromatic acid ester being present in an amount sufficient to improve the basic dyeability of the copolyester resin.

4,161,578

PROCESS FOR SOLID PHASE POLYMERIZATION OF POLYESTER

Dale J. Herron, Minneapolis, Minn., assignor to Bepex Corporation, Santa Rosa, Calif.

Filed May 12, 1978, Ser. No. 905,226

Int. Cl.[2] C08G *63/18*

U.S. Cl. 528—272 **8 Claims**

1. A process for continuous production of high molecular weight polyethylene terephthalate by polycondensation in the solid phase from a dried granulated polyethylene terephthalate having a beginning intrinsic viscosity of at least 0.4 without occurrence of stickiness of the granulate, which process comprises:

(A) crystallizing the polymer by heating at a temperature in the range of about 180° to 220° C. under forced motion and under an inert gas atmosphere for a residence time less than about 1.5 hours;

(B) discharging the crystallized product at a temperature of at least 180° C., a density of at least 1.385 grams per cubic centimeter, and a moisture content of less than 0.02 percent by weight;

(C) continuously introducing the crystallized granulate to a continuous fixed bed reactor and polycondensing in contact with an inert gas at a temperature in the range of about 210° to 235° C. to achieve a reaction temperature within the range of about 200° to 230° C. and higher than the crystallization temperature, whereby polycondensation takes place and sticking of the granulate is avoided; and

(D) continuously removing the polycondensed granulate flowing from the reaction zone.

4,161,579

EXTRUSION GRADE POLYETHYLENE TEREPHTHALATE

Robert Edelman, Staten Island, N.Y.; Frank M. Berardinelli, Millington, and Kurt F. Wissbrun, Short Hills, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 10, 1978, Ser. No. 894,674

Int. Cl.[2] C08G *63/76, 63/70*

U.S. Cl. 525—444 **15 Claims**

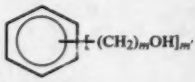
1. A high melt-strength, gel-free, branched polyethylene terephthalate polymer, suitable for extrusion blow molding applications, comprising polyethylene terephthalate which has been modified by the incorporation of: (a) from about 0.025 to about 1.5 mol percent of chain branching agent selected from one or more members of the group consisting of pentaerythritol; compounds having the formula:

$$R^1(OH)_k$$

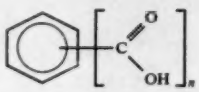
wherein R^1 is a saturated aliphatic hydrocarbon radical containing from 3 to 6 carbon atoms and k is an integer from 3 to 6; compounds having the formula:

$$R^2\text{-}(CH_2OH)_l$$

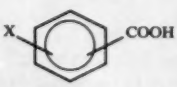
wherein R^2 is a saturated aliphatic hydrocarbon radical containing from 1 to 6 carbon atoms and wherein l is an integer from 3 to 6; compounds having the formula:



where m is an integer from 1 to 6 and m' is an integer from 3 to 6; and compounds having the formula:



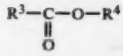
wherein n is an integer from 3 to 4; and (b) from about 0.25 to about 10 equivalents based on the number of moles of (a) of a chain terminating agent, the chain terminating agent having a boiling point of above about 200° C. and being stable at temperatures of up to about 305° C. and selected from one or more members of the group consisting of aromatic monocarboxylic acids having the formula:



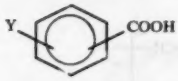
wherein X is a member selected from the group consisting of hydrogen, an aliphatic radical containing from 1 to 10 carbon atoms, an alkoxy group containing from 1 to 10 carbon atoms, an aryloxy group containing from 1 to 10 carbon atoms, a halogen, and a nitro group; heterocyclic aromatic monocarboxylic acids; fused polycyclic aromatic monocarboxylic acids; aryl aliphatic monocarboxylic acids having the formula:

$$(C_6H_5)_p\,CH_{3-p}COOH$$

where p is an integer from 1 to 3; substituted and unsubstituted, saturated and unsaturated aliphatic monocarboxylic acids having from 6 to 30 carbon atoms; substituted and unsutstituted alicyclic carboxylic acids having from 6 to 30 carbon atoms; monofunctional esters having the formula:



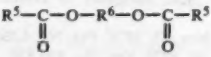
wherein R^3 is an organic radical derived from a member selected from the group consisting of aromatic monocarboxylic acids having the formula:



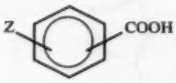
wherein Y is a member selected from the group consisting of hydrogen, an aliphatic radical containing from 1 to 10 carbon atoms, an alkoxy group containing from 1 to 10 carbon atoms, an aryloxy group containing from 1 to 10 carbon atoms, a halogen and a nitro group; heterocyclic aromatic monocarboxylic acids; fused polycyclic aromatic monocarboxylic acids; aryl aliphatic monocarboxylic acids having the formula:

$$(C_6H_5)_q\,CH_{3-q}\,COOH$$

where q is an integer from 1 to 3; substituted and unsubstituted aliphatic monocarboxylic acids having from 6 to 30 carbon atoms; and substituted and unsubstituted alicyclic carboxylic acids having from 6 to 30 carbon atoms;
and wherein R^4 is a member selected from the group consisting of benzyl radicals and aliphatic radicals having from 1 to 18 carbon atoms; and which are the reaction product of an alcohol and a monocarboxylic acid; and difunctional esters having the formula



wherein R^5 is an organic radical derived from a member selected from the group consisting of aromatic monocarboxylic acids having the formula:



wherein Z is a member selected from the group consisting of hydrogen, an aliphatic radical containing from 1 to 10 carbon atoms, an alkoxy group containing from 1 to 10 carbon atoms, an aryloxy group containing from 1 to 10 carbon atoms, a halogen, and a nitro group; heterocyclic aromatic monocarboxylic acids; fused polycyclic aromatic monocarboxylic acids; aryl aliphatic monocarboxylic acids having the formula:

$$(C_6H_5)_r\,CH_{3-r}\,COOH$$

where r is an integer from 1 to 3; substituted and unsubstituted, saturated and unsaturated aliphatic monocarboxylic acids having from 1 to 30 carbon atoms; and substituted and unsubstituted alicyclic carboxylic acids having from 6 to 30 carbon atoms; and wherein R^6 is a member selected from the group consisting of saturated aliphatic radicals having from 2 to 18 carbon atoms and saturated alicyclic radicals having from 5 to 18 carbon atoms; and which are the reaction product of a diol and a monocarboxylic acid; the modified polyethylene terephthalate having a zero shear rate melt viscosity at a temperature in the range of from about 265° C. to about 300° C. of from about 10^5 to about 10^6 poise and a melt viscosity at a shear rate of about 10^3 seconds -1 and at a temperature in the range of from about 265° C. to about 300° C. of from about 10^3 to about 10^4 poise.

4,161,580

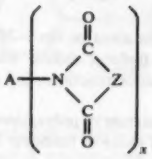
THERMOSETTING MIXTURES OF POLYIMIDE BETA-AMINO CROTONIC ACID DERIVATIVE AND POLYAMINE WHICH ARE STABLE ON STORAGE

Theobald Haug, Frenkendorf; Jürg Keifer, Reinach; Peter Ruf, Binningen, all of Switzerland, and Andre Schmitter, Hegenheim, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 588,529, Jun. 19, 1975, Pat. No. 4,089,845. This application Feb. 21, 1978, Ser. No. 879,283
Claims priority, application Switzerland, Jul. 2, 1974, 9050/74
Int. Cl.[2] C08G *69/08*
U.S. Cl. 528—322 **12 Claims**

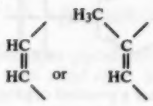
1. A storage-stable, heat-curable, thermosetting composition of matter which consists essentially of

(a) a polyimide of a saturated dicarboxylic acid of formula I



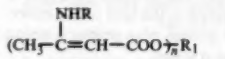
(I)

wherein A denotes a x-valent organic radical of at least 2 and at most 30 carbon atoms, Z denotes a radical of the formula

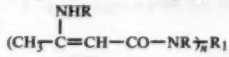


and x denotes the number 2 or 3, or a mixture of said polyimides;

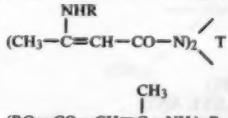
(b) a beta-aminocrotonic acid derivative or mixture of said derivatives selected from the group consisting of those of the formulae II to VIII



(II)



(III)



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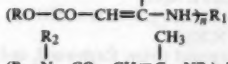
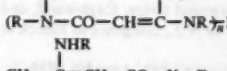
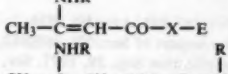


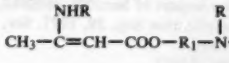
(V)



(VI)



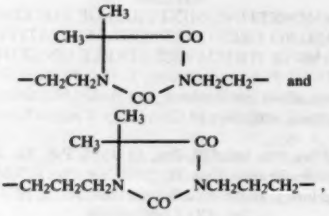
(VII)



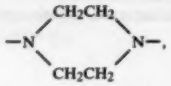
(VIII)

wherein each of R and R_2 denotes a hydrogen atom, a linear, branched or cyclic hydrocarbon radical having up to 9 carbon atoms, R_1 denotes a n-valent linear, branched

or cyclic hydrocarbon radical having up to 20 carbon atoms or a heterocyclic radical selected from the group consisting of

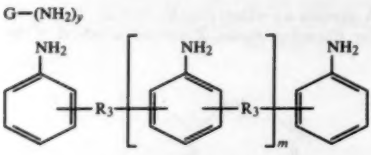


T together with both nitrogen atoms denotes



x denotes an oxygen atom or the —NH— group, E denotes the allyl or furfuryl radical which is suitable to undergo polymerization reactions, and n is a number from 2 to 4; and

(c) a polyamine or a mixture of polyamines selected from the group consisting of those of formulae IX and X



(IX)

(X)

wherein G denotes a y-valent organic radical with 2 to 40 carbon atoms, y is an integer from 2 to 4, R_3 each denote a divalent hydrocarbon radical of an aldehyde or ketone with 1 to 8 carbon atoms resulting from removal of the oxygen atom, and m is a number from 0.1 to 2; and wherein said composition contains 0.25 to 1.0 equivalent of the sum of beta-aminocrotonyl group (b) equivalents plus primary amino group (c) equivalents per each 1.0 equivalent of imide groups (a), the content of primary amino group equivalents, referred to the sum of the equivalents of beta-aminocrotonyl groups plus primary amino groups, being at most 90% of the sum.

4,161,581

POLY-[(DIALKYL AND HYDROXY-DIALKYL-IMINO)ETHYLENE HALIDES] AND PROCESS

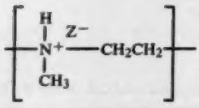
Arthur F. Wagner, Princeton; Nathaniel Grier, Englewood, and Tsung-Ying Shen, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 462,263, Apr. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 369,042, Jun. 11, 1973, abandoned. This application Sep. 29, 1977, Ser. No. 837,980

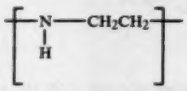
Int. Cl.[2] C08G 73/02

U.S. Cl. 525—411 **4 Claims**

1. A method of preparing a linear unbranched non-cross-linked polymer comprising repeating units of the formula



where Z^- is a counteranion, which comprises admixing a polymer comprising repeating units of the formula



with an excess of aqueous formaldehyde and formic acid, and heating the resulting admixture to a temperature of from 30° to 100° C. for up to 100 hours wherein a mixture of 97 to 100% formic acid and aqueous formaldehyde is employed and, following the heating of said admixture, there is then added to the reaction mixture an aqueous mineral acid HZ, and the aqueous acidic mixture is subjected to distillation under reduced pressure thereby removing reagents and by-products.

4,161,582

PROCESS TO PRODUCE OXAZINOMYCIN

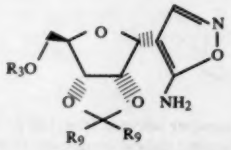
Manfred Weigele, North Caldwell, and Silvano DeBernardo, Upper Montclair, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 743,887, Nov. 22, 1976, Pat. No. 4,096,321. This application Mar. 20, 1978, Ser. No. 890,550

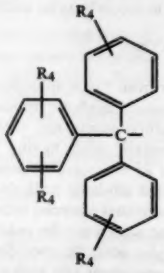
Int. Cl.[2] C07G 3/00

U.S. Cl. 536—1 **4 Claims**

1. A compound of the formula



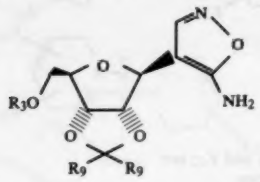
wherein R_9 is hydrogen or lower alkyl and R_3 is selected from the group consisting of



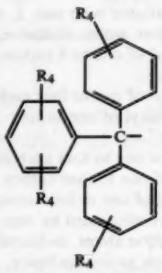
wherein R_4 is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halo and nitro and

wherein R_5, R_6 and R_7 are lower alkyl.

2. A compound of the formula



wherein R_9 is hydrogen or lower alkyl and R_3 is selected from the group consisting of



wherein R_4 is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halo and nitro, and

wherein R_5, R_6 and R_7 are lower alkyl.

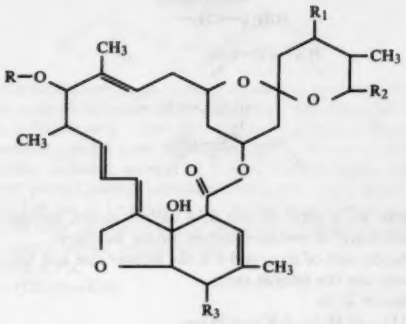
4,161,583

METHOD FOR THE SEPARATION AND PURIFICATION OF ANTIBIOTIC MACROLIDES

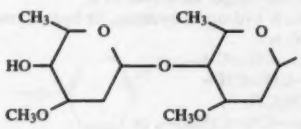
Kenneth E. Wilson, Woodbridge, and Thomas W. Miller, Carteret, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 3, 1977, Ser. No. 839,094
Int. Cl.[2] C07H *17/08*
U.S. Cl. 536—17 A 7 Claims

1. A method for purifying crude C-076 extract solutions obtained from the fermentation of a C-076 producing strain of *Streptomyces avermitilis*, wherein the C-076 compounds have the structure:



wherein R is:



and wherein

the broken line indicates a single or a double bond;

R_1 is hydroxy and is present only when said broken line indicates a single bond;

R_2 is propyl or butyl; and

R_3 is methoxy or hydroxy, which comprises:

(a) dissolving said crude extract solution into a low boiling hydrocarbon solvent;

(b) extracting said low boiling hydrocarbon solution with ethylene glycol;

(c) extracting the ethylene glycol extract with an organic solvent selected from ethyl ether, ethyl acetate, chloroform, or benzene;

(d) recovering the purified C-076.

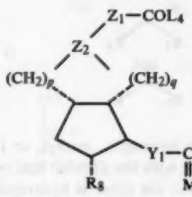
4,161,584

CYCLOAMIDES OF NITRILOPROSTACYCLINS

Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

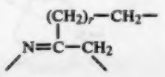
Continuation-in-part of Ser. No. 807,514, Jun. 17, 1977, Pat. No. 4,097,489. This application Apr. 5, 1978, Ser. No. 893,586
Int. Cl.[2] C07D *221/16*
U.S. Cl. 542—421 49 Claims

1. A prostacyclin analog of the formula



wherein R_8 is hydrogen, hydroxy, or hydroxymethyl

wherein Z_2 is



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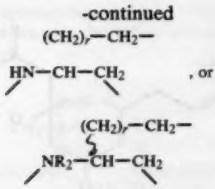


wherein R_2 is alkyl of one to 4 carbon atoms, inclusive, or alkylcarbonyl of one to 4 carbon atoms, inclusive;

wherein one of p, q, and r is the integer one and the other two are the integer zero;

wherein Z_1 is

(1) $-(CH_2)_g-CH_2-CH_2-$,

(2) $-(CH_2)_g-CH_2-CF_2-$, or

(3) trans$-(CH_2)_g-CH=CH-$,

wherein g is the integer zero, one, or 2;

wherein R_4 is hydrogen, hydroxy, or hydroxymethyl;

wherein Y_1 is

(1) trans$-CH=CH-$,

(2) cis$-CH=CH-$

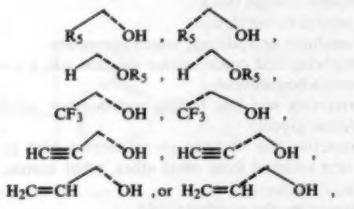
(3) $-CH_2CH_2-$,

(4) trans$-CH=C(Hal)-$, or

(5) $-C\equiv C-$

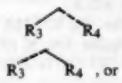
wherein Hal is chloro or bromo;

wherein M_1 is

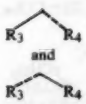


wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive

wherein L_1 is

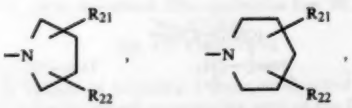


a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein L_4 is cycloamino selected from the group consisting of



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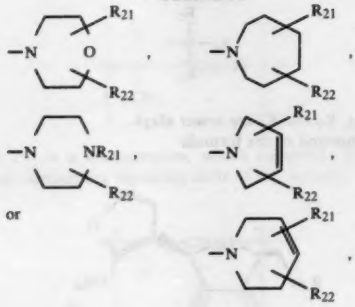


wherein R_{21} and R_{22} are

(i) hydrogen;

(ii) alkyl of one to 12 carbon atoms, inclusive;

(iii) cycloalkyl of 3 to 10 carbon atoms, inclusive;

(iv) aralkyl of 7 to 12 carbon atoms, inclusive;

(v) phenyl;

(vi) phenyl substituted with one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;

(vii) carboxyalkyl of one to four carbon atoms, inclusive;

(viii) carbamoylalkyl of one to four carbon atoms, inclusive;

(ix) cyanoalkyl of one to four carbon atoms, inclusive;

(x) acetylalkyl of one to four carbon atoms, inclusive;

(xi) benzoylalkyl of one to four carbon atoms, inclusive;

(xii) benzoylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive; hydroxy, alkoxy of one to 3 carbon atoms, inclusive, carboxy, alkoxycarbonyl of one to four carbon atoms, inclusive, or nitro;

(xiii) pyridyl;

(xiv) pyridyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive; or alkoxy of one to 3 carbon atoms, inclusive;

(xv) pyridylalkyl of one to 4 carbon atoms, inclusive;

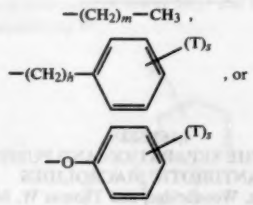
(xvi) pyridylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms;

(xvii) hydroxyalkyl of one to 4 carbon atoms, inclusive;

(xviii) dihydroxyalkyl of one to 4 carbon atoms, and

(xix) trihydroxyalkyl of one to 4 carbon atoms; with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;

wherein R_7 is



wherein m is the integer one to 5, inclusive, h is the integer zero to 3, inclusive; s is the integer zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, or with the proviso that not more than two T's are other than alkyl; and the pharmacologically acceptable acid addition salts thereof when R_2 is not alkylcarbonyl.

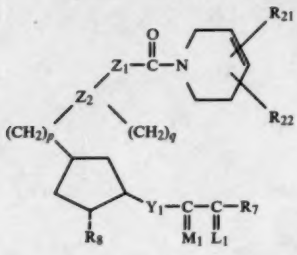
4,161,585

5-HYDROXY-PGI$_1$, 3,4-DIDEHYDROPIPERIDYLAMIDES

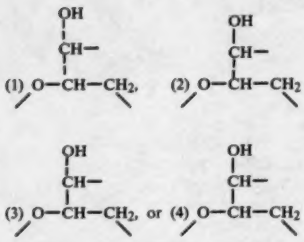
Roy A. Johnson, and John C. Sih, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 815,648, Jul. 14, 1977, Pat. No. 4,110,532. This application Apr. 24, 1978, Ser. No. 899,204
Int. Cl.^{2} C07D *405/02*
U.S. Cl. 542—426 **47 Claims**

1. A prostacyclin analog of the formula



wherein Z_2 is



wherein one of p or q is the integer zero or one and the other is the integer zero;

wherein Z_1 is

(1) $-(CH_2)_g-CH_2-CH_2-$,

(2) $-(CH_2)_g-CH_2-CF_2-$, or

(3) trans$-(CH_2)_g-CH=CH-$,

wherein g is the integer one, 2, or 3 when q is zero and zero, one, or 2 when q is one;

wherein R_8 is hydrogen, hydroxy, or hydroxymethyl;

wherein Y_1 is

(1) trans$-CH=CH-$,

(2) cis$-CH=CH-$,

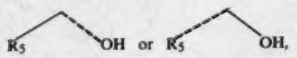
(3) $-CH_2CH_2-$,

(4) trans$-CH=C(Hal)-$, or

(5) $-C\equiv C-$

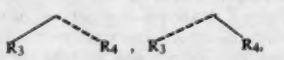
wherein Hal is chloro or bromo;

wherein M_1 is



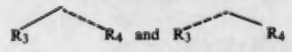
wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive:

wherein L_1 is



or a mixture of

-continued

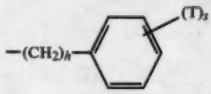


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

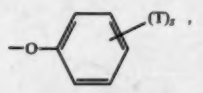
wherein R_{21} and R_{22} are hydrogen, alkyl of one to 12 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive; and

wherein R_7 is

(1) $-(CH_2)_3-CH_3$,



(2)



(3)

wherein h is the integer zero or one; s is the integer zero, one, 2, or 3; and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or with the proviso that not more than two T's are other than alkyl.

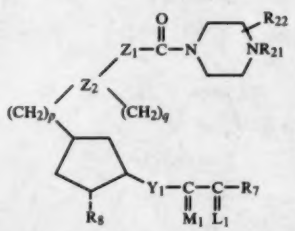
4,161,586

5-HYDROXY-PGI$_1$ PIPERAZINYLAMIDES

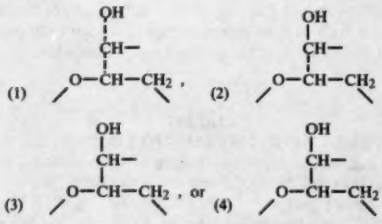
Roy A. Johnson, and John C. Sih, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 815,648, Jul. 14, 1977, Pat. No. 4,110,532. This application Apr. 24, 1978, Ser. No. 899,202
Int. Cl.^{2} C07D *405/06*
U.S. Cl. 542—426 **47 Claims**

1. A prostacyclin analog of the formula

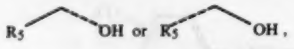


wherein Z_2 is

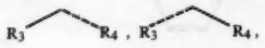


wherein one of p or q is the integer zero or one and the other is the integer zero;

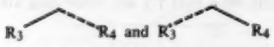
wherein Z_1 is
(1) $-(CH_2)_g-CH_2-CH_2-$,
(2) $-(CH_2)_g-CH_2-CF_2-$, or
(3) trans-$(CH_2)_q-CH=CH-$,
wherein g is the integer one, 2, or 3 when q is zero and zero, one, or 2 when q is one;
wherein R_8 is hydrogen, hydroxy, or hydroxymethyl;
wherein Y_1 is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) $-CH_2CH_2-$,
(4) trans—CH=C(Hal)—, or
(5) —C≡C—
wherein Hal is chloro or bromo;
wherein M_1 is



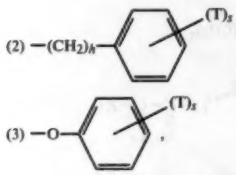
wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive:
wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_{21} and R_{22} are hydrogen, alkyl of one to 12 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive; and
wherein R_7 is
(1) $-(CH_2)_3-CH_3$,



wherein h is the integer zero or one; s is the integer zero, one, 2, or 3; and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive or with the proviso that not more than two T's are other than alkyl.

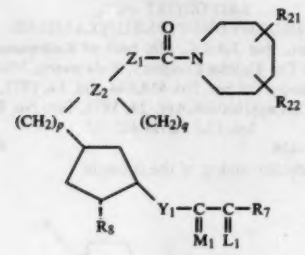
4,161,587

5-HYDROXY-PGI$_1$ HEXAMETHYLIMINOAMIDES

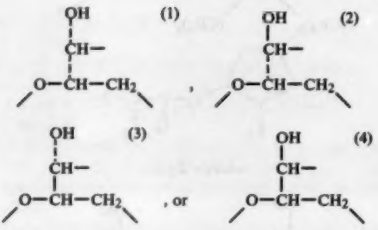
Roy A. Johnson, and John C. Sih, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 815,648, Jul. 14, 1977, Pat. No. 4,110,532. This application Apr. 24, 1978, Ser. No. 899,201
Int. Cl.[2] **C07D** *405/06*
U.S. Cl. 542—426 **47 Claims**

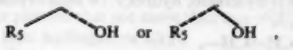
1. A prostacyclin analog of the formula



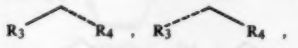
wherein Z_2 is



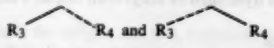
wherein one of p or q is the integer zero or one and the other is the integer zero;
wherein Z_1 is
(1) $-(CH_2)_g-CH_2-CH_2-$,
(2) $-(CH_2)_g-CH_2-CF_2-$, or
(3) trans—$(CH_2)_g$—CH=CH—,
wherein g is the integer one, 2 or 3 when q is zero and zero, one, or 2 when q is one;
wherein R_8 is hydrogen, hydroxy, or hydroxymethyl;
wherein Y_1 is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) $-CH_2CH_2-$,
(4) trans—CH=C(Hal)—, or
(5) —C≡C—
wherein Hal is chloro or bromo;
wherein M_1 is



wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive:
wherein L_1 is



or a mixture of

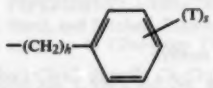


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_{21} and R_{22} are hydrogen, alkyl of one to 12 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of

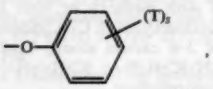
one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive; and

wherein R_7 is

(1) $-(CH_2)_3-CH_3$,



(2)



(3)

wherein h is the integer zero or one; s is the integer zero, one, 2, or 3; and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or with the proviso that not more than two T's are other than alkyl.

4,161,588
POLYMERIZABLE ESTERS

George E. Green, Cherry Hinton, England, and Ewald Losert, Birsfelden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

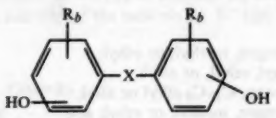
Continuation of Ser. No. 718,487, Aug. 30, 1976, abandoned, which is a division of Ser. No. 548,702, Feb. 10, 1975, Pat. No. 3,996,121. This application Jan. 3, 1978, Ser. No. 866,321

Claims priority, application United Kingdom, Feb. 22, 1974, 8105/74

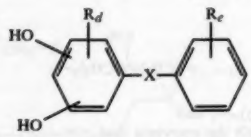
Int. Cl.[2] **C07D** *303/02*

U.S. Cl. 542—432 **7 Claims**

1. An ester which polymerizes on exposure to actinic radiation which comprises the product obtained by reacting (1) an advancement product of one equivalent of a polyepoxide having per average molecule at least three 2,3-epoxypropyl groups directly attached to oxygen, nitrogen or sulfur atoms with 0.2 to 0.67 equivalents of a dihydric phenol of the formula



or



wherein

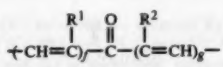
each R represents halogen, alkyl, cycloalkyl, alkenyl, alkoxy, or carbalkoxy group each containing up to 9 carbon atoms, nitro, carboxyl, sulphonic acid or phosphonic acid group in the form of a salt,

each b represents zero or an integer of 1 to 4,

d represents zero or an integer of 1 to 3,

e represents zero or an integer of 1 to 5, and

x represents a grouping of the formula



or

-continued

or

wherein

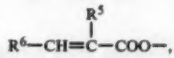
R^1 and R^2 individually are each a hydrogen atom, an alkyl group of 1 to 4 carbon atoms, or a phenyl group, or conjointly denote a polymethylene chain of 2 to 4 methylene groups,

R^3 and R^4 are each a hydrogen atom, an alkyl group of 1 to 4 carbon atoms, or a phenyl group, and

f and g are each zero, 1, or 2, with the proviso that they are not both zero, and

(ii) 0.5 to 0.98 equivalents of an olefinically unsaturated monocarboxylic acid of the formula YH per equivalent of (i) wherein

Y represents an olefinic acyloxy group of formula



wherein

R^5 represents a hydrogen, chlorine, or bromine atom, a cyano group, or a alkyl group of up to 4 carbon atoms, and

R^6 represents a hydrogen atom or an aliphatic, aromatic, or araliphatic group each group having up to 12 carbon atoms, or a 2-furyl group.

4,161,589
SPIRODIPYRANS

Hans Baumann, Wachenheim, and Andreas Oberlinner, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

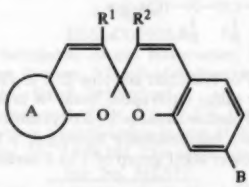
Filed Aug. 8, 1978, Ser. No. 932,015

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737207

Int. Cl.[2] **C07D** *493/10*

U.S. Cl. 544—70 **7 Claims**

1. A spirodipyran of the general formula



where

A is the radical of a fused benzene ring which is unsubstituted or is substituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro, chlorine, bromine or carboalkoxy (where alkoxy is of 1 to 6 carbon atoms), or is the radical of a naphthalene ring fused in the 2,1-position, which is unsubstituted or substituted by chlorine, bromine or carboalkoxy (where alkoxy is of 1 to 6 carbon atoms),

R^1 is alkyl of 1 to 16 carbon atoms or is phenyl which is unsubstituted or substituted by alkyl of 1 to 4 carbon

atoms, alkoxy of 1 to 4 carbon atoms, chlorine or bromine, or is phenalkyl of 7 to 10 carbon atoms and

R^2 is hydrogen, or

R^1 and R^2 together are a trimethylene bridge which is unsubstituted or in which one, two or three H atoms are replaced by alkyl of 1 to 12 carbon atoms, and

B is N-morpholinyl, which is unsubstituted or substituted by one or two methyl, or is N-thiomorpholinyl-S-dioxide, N-(N′-alkyl)-piperazinyl (where alkyl is of 1 to 4 carbon atoms) or N-isoindolinyl.

4,161,590

FLUORINATED AMPHOTERIC AND CATIONIC SURFACTANTS

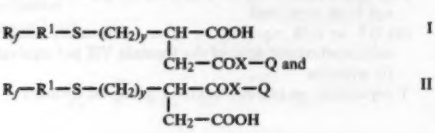
Karl F. Mueller, New York, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 538,432, Jan. 3, 1975, Pat. No. 4,069,244. This application Jan. 12, 1978, Ser. No. 868,771

Int. Cl.[2] C07D *295/14*

U.S. Cl. 544—159 **3 Claims**

1. Compounds of the formulae



I

II

wherein

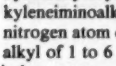
R_f is straight or branched chain perfluoroalkyl of 1 to 18 carbon atoms or said perfluoroalkyl substituted by perfluoroalkoxy of 2 to 6 carbon atoms;

R^1 is branched or straight chain alkylene of 1 to 12 carbon atoms, alkylenethioalkylene of 2 to 12 carbon atoms, alkyleneoxyalkylene of 2 to 12 carbon atoms or alkyleneiminoalkylene of 2 to 12 carbon atoms where the nitrogen atom contains as a third substituent, hydrogen or alkyl of 1 to 6 carbon atoms;

y is 1 or zero;

X is —NR—, wherein R is hydrogen, alkyl of 1 to 6 carbon atoms or hydroxyalkyl of 1 to 6 carbon atoms; and

Q is a cyclic amino group selected from

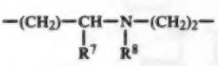


wherein Y is a diradical of the formulae

$-(CH_2)_4-$

$-(CH_2)_5-$

$-(CH_2)_2-O-(CH_2)_2-$ or



R^2 is a linear or branched alkylene of 2 to 12 carbon atoms, oxygen or sulfur interrupted linear or branched alkylene of up to 60 carbon atoms or hydroxyl substituted alkylene.

R^7 and R^8 are independently hydrogen, a lower alkyl or hydroxy-lower alkyl group of 1 to 6 carbon atoms.

4,161,591

BUTYRAMIDES AND BUTYRATES

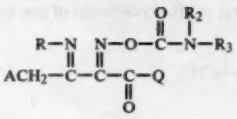
Russell F. Bellina, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 463,987, Apr. 25, 1974, Pat. No. 4,059,623, which is a continuation-in-part of Ser. No. 369,606, Jun. 13, 1973, abandoned. This application Oct. 25, 1977, Ser. No. 845,053

Int. Cl.[2] C07C *103/22*; C07D *295/12, 295/22*

U.S. Cl. 544—164 **10 Claims**

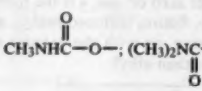
1. A compound of the formula

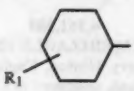


, when Q is $-OR_4$,

A is hydrogen or methyl;

R is C_1–C_{18} alkyl; C_3–C_4 alkenyl; C_5–C_7 cycloalkyl optionally substituted with methoxy or with 1 or 2 methyl groups; C_6–C_8 cycloalkylalkyl; C_1–C_3 alkoxy; alkoxyalkyl with a total of 3–6 carbon atoms; benzyl; phenethyl; $(CH_3)_2N-$; $(CH_3)C_2H_5N-$; $(C_2H_5)_2N-$; 1-(4-methylpiperazinyl); N-morpholino;





wherein:

R_1 is hydrogen, methyl, methoxy, $(CH_3)_2N-$, CH_3S-, or fluorine;

R_2 is hydrogen, methyl, or ethyl;

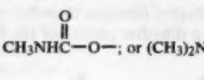
R_3 is methyl, ethyl, or allyl;

R_4 is C_1–C_2 alkyl;

, and when Q is $-NR_5R_6$,

A is hydrogen or methyl;

R is $(CH_3)_2N-$; $(CH_3)C_2H_5N-$; $(C_2H_5)_2N-$; 1-(4-methylpiperazinyl); N-morpholino;



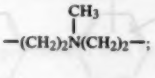
R_2 is hydrogen, methyl, or ethyl;

R_3 is methyl, ethyl, or allyl;

R_5 is methoxy, C_1–C_4 alkyl or allyl;

R_6 is hydrogen, methyl, or ethyl; and

R_5 and R_6 can be taken together to form a ring and are $-(CH_2)_2O(CH_2)_2-$;

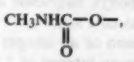


or $-(CH_2)_n-$; and

n is 4–6; with the provisos that

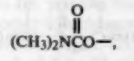
(i) the total carbon content of, R_2, R_3 and R_4 is not greater then 8C;

(ii) when R is



R_2 is hydrogen and R_3 is CH_3;

(iii) when R is



R_2 and R_3 are both methyl; and

(iv) the total carbon content of R_2, R_3, R_5 and R_6 is not greater than 8C.

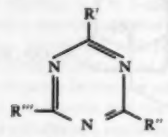
6. Compound of claim 1: N,N-dimethyl-2-[(methylcarbamyl-)oxyimino]-3-(N-morpholine)iminobutyramide.

4,161,592
PIPERIDINYL-s-TRIAZINES

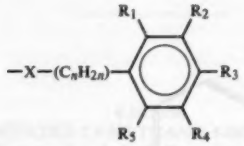
Samuel Evans, Basel, and Michael Rasberger, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 1, 1977, Ser. No. 812,294
Claims priority, application Switzerland, Jul. 8, 1976, 8774/76
Int. Cl.² C07D *251/46, 251/52, 251/70*
U.S. Cl. 544—198 **9 Claims**

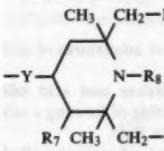
1. A member selected from the group consisting of a compound of the formula I

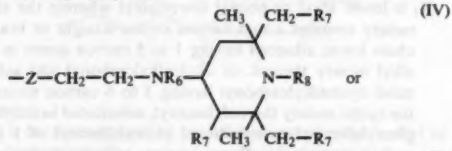

(I)

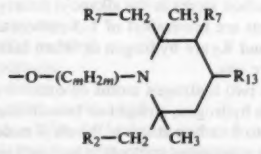
and an addition salt thereof, in which one of the radicals R′, R″ and R‴ is a group of the formula II:


(II)

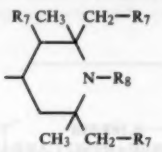
wherein one of R_1 and R_3 is —OH and the other is hydrogen, R_2 is C_1–C_{12} alkyl, C_5–C_7 cycloalkyl, C_6–C_{10} aryl or C_7–C_9 aralkyl, R_4 and R_5 are hydrogen, C_1–C_{12} alkyl, C_5–C_7 cycloalkyl, C_6–C_{10} aryl or C_7–C_9 aralkyl, n is an integer of 0 to 12 and X is —O—, —S— or —NR_6— wherein R_6 is hydrogen or C_1–C_{12} alkyl, and one of the radicals R′, R″ and R‴ is one of the groups


(III)


(IV)


(V)

in which Y is —O— or —NR_6— wherein R_6 has the meaning defined above, Z is —O— or —S—, m is 1 to 6, R_7 is hydrogen or C_1–C_8 alkyl and R_8 is hydrogen, oxygen, C_1–C_{12} alkyl, C_3–C_6 alkenyl, C_3–C_4 alkinyl, C_2–C_{21} alkoxyalkyl, C_7–C_8 aralkyl, 2,3-epoxypropyl, an aliphatic acyl group with 1–4 C atoms or one of the groups —CH_2COOR_9, —CH_2—$CH(R_{10})$—OR_{11}, —$COOR_{12}$ or —$CONHR_{12}$, wherein R_9 is C_1–C_{12} alkyl, C_3–C_6 alkenyl, phenyl, C_7–C_8 aralkyl or cyclohexyl, R_{10} is hydrogen, methyl or phenyl, R_{11} is hydrogen, an aliphatic, aromatic, araliphatic or alicyclic acyl group with 1–8 C atoms, wherein the aromatic part is unsubstituted or is substituted by chlorine, C_1–C_4 alkyl, C_1–C_8 alkoxy or by hydroxyl, and R_{12} is C_1–C_{12} alkyl, cyclohexyl, phenyl or benzyl, and R_{13} is hydrogen, —OH or one of the groups —O—CO—R_{14} or —NR_{12}—CO—R_{14}, wherein R_{14} is C_1–C_{12} alkyl or phenyl, and one of the radicals R′, R″ and R‴ independently of the others is an identical or different group of the formula II, or is an identical or different group III, IV or V, or is —N_3, or one of the groups —S—R_{15}, —OR_{17}, —P(O)—$(OR_{17})_2$ or —$NR_{18}R_{10}$, wherein R_{15} is hydrogen, C_1–C_{18} alkyl, C_5–C_7 cycloalkyl, C_6–C_{10} aryl, C_7–C_9 aralkyl or the group —(C_pH_{2p})—CO—OR_{16} wherein R_{16} is C_1–C_{18} alkyl, and p is 1 to 6, R_{17} is C_1–C_{18} alkyl, C_6–C_{10} aryl or C_7–C_9 aralkyl and R_{18} and R_{19} independently of one another are hydrogen, C_1–C_{18} alkyl, C_5–C_7 cycloalkyl, C_6–C_{10} aryl, C_7–C_9 aralkyl or the group


(VI)

in which R_7 and R_8 have the meaning defined above.

4,161,593
PROCESS FOR THE PREPARATION OF TRIAZINES CONTAINING A MIXTURE OF CHLORINE AND FLUORINE SUBSTITUENTS, AND OF CYANURIC FLUORIDE

Erich Klauke, Odenthal; Ernst Kysela, Bergisch-Gladbach, and Alfons Dorlars, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 18, 1978, Ser. No. 870,601
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1977, 2702625
Int. Cl.² C07D *251/28*
U.S. Cl. 544—217 **5 Claims**

1. Process for the preparation of triazines containing a mixture of chlorine and fluorine substituents, characterised in that cyanuric chloride is heated with cyanuric fluoride to temperatures from 30°–300° C. in the presence of suitable catalysts.

4,161,594
DIALCOHOLS

Hans Batzer, Arlesheim; Jürgen Habermeier, Pfeffingen, and Daniel Porret, Fresens, NE, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 82,074, Oct. 19, 1970, abandoned, which is a continuation-in-part of Ser. No. 870,547, Nov. 4, 1969, Pat. No. 3,629,263. This application Jan. 17, 1975, Ser. No. 541,911
Claims priority, application Switzerland, Nov. 11, 1968, 16803/68
The portion of the term of this patent subsequent to Dec. 21, 1988, has been disclaimed.
Int. Cl.² C07D *239/54, 239/62, 233/72*
U.S. Cl. 544—302 **10 Claims**

1. A compound which is 1,3-di-(β-hydroxyethyl)-5-phenyl-5-ethylbarbituric acid.

2. A compound which is 1,3-di-(β-hydroxy-n-propyl)-5,5-diethylbarbituric acid.

3. A compound which is 1,3-di-(β-hydroxyethoxyethyl)-5,5-dimethylhydantoin.

7. A compound which is 1,3-di-(β-hydroxyethyl)-5,5-dimethyl-6-isopropyl-5,6-dihydrouracil.

9. 1,3-di-(β-hydroxy-n-propyl)-5,5-dimethylhydantoin which is a crystalline solid.

4,161,595

LEVULINIC ACID SALT

Murray A. Kaplan, Syracuse, and Alphonse P. Granatek, Baldwinsville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,678
Int. Cl.[2] C07D *239/95*
U.S. Cl. 544—284 **2 Claims**

1. A levulinic acid addition salt of 4-amino-6,7-dimethoxy-2[4-(5-methylthio-1,3,4-oxadiazole-2-carbonyl]piperazin-1-yl)-quinazoline wherein the base to acid ratio comprises one mole equivalent of said base to from 1.25 to 1.35 mole equivalents of said acid.

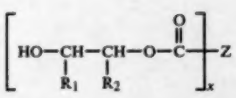
4,161,596

PROCESS FOR PREPARING CARBAMOYLOXY ACRYLATES

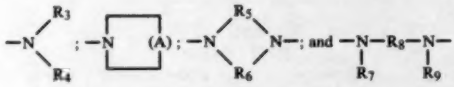
Frank G. Cowherd, III, and Louis F. Theiling, Jr., both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 755,063, Dec. 28, 1976, Pat. No. 4,126,747. This application Aug. 25, 1978, Ser. No. 936,819
Int. Cl.[2] C07D *295/18*
U.S. Cl. 544—388 **11 Claims**

1. A process for producing a carbamoyloxy acrylate which comprises esterifying an hydroxyalkyl carbamate of the structure



wherein x is 1 or 2; R_1 and R_2 are each hydrogen or alkyl of up to 10 carbons and Z is chosen from the group consisting of



wherein R_3 is hydrogen, alkyl of up to 10 carbon atoms, or cycloalkyl of up to 10 carbon atoms; R_4 is alkyl of up to 10 carbon atoms, cycloalkyl of up to 10 carbon atoms, hydroxyalkyl of up to 3 carbon atoms or aralkyl having up to 10 carbon atoms in the alkyl segment; R_5, R_6, and R_8 are each methylene, ethylene, or 1,2-propylene; R_7 and R_9 are each hydrogen or alkyl of up to 10 carbon atoms; and A is a divalent alkylene chain having up to 10 carbon atoms completing a 3–6 membered ring structure, by reacting said hydroxyalkyl carbamate with acrylic or methacrylic acid at a temperature of from 40° C. to 80° C. in contact with an esterification catalyst and from 50 ppm to 5,000 ppm, based on the weight of the acrylic or methacrylic acid, of a polymerization inhibitor chosen from the group consisting of lower alkoxy-substituted phenolic and alkylated alkoxyphenolic polymerization inhibitors having up to 10 carbon atoms in the alkyl and alkoxy segments.

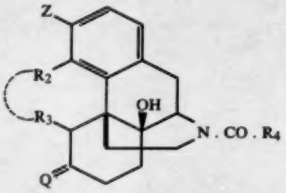
4,161,597

N-ALKYL-14-HYDROXYMORPHINANS AND DERIVATIVES

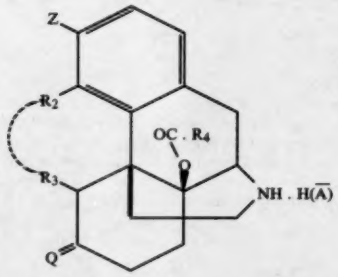
Roy A. Olofson, State College, Pa., and Joseph P. Pepe, Rochester, N.Y., assignors to Research Corporation, New York, N.Y.

Filed Dec. 20, 1976, Ser. No. 751,571
Int. Cl.[2] C07D *489/08, 221/28*
U.S. Cl. 546—15 **17 Claims**

1. A process of preparing a morphinan of formula



the corresponding optical isomer thereof and mixtures of said optical isomers which comprises adding to an acid addition salt selected from the group having the formula



the corresponding optical isomer thereof or admixtures of said optical isomers,

an amount of base sufficient to neutralize said acid salt wherein H(A) is a hydrogen acid capable of forming a salt with a secondary amine, wherein Z is R_1O,

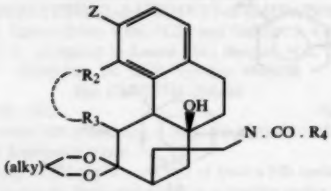
R_1 is lower alkyl or phenyl lower alkyl wherein the alkyl moiety contains 1 to 5 carbon atoms, straight or branch chain lower alkanoyl having 1 to 5 carbon atoms in the alkyl moiety thereof, or cycloalkylcarbonyl and substituted cycloalkylcarbonyl having 3 to 6 carbon atoms in the cyclic moiety thereof, benzoyl, substituted benzoyl, or phenylalkanoyl or substituted phenylalkanoyl of 1 to 6 carbon atoms in the alkanoyl moiety wherein the substituents are loweralkyl of 1–5 carbon atoms,

R_2 and R_3 are hydrogen or when taken together R_2 and R_3 are oxa,

Q is two hydrogen atoms or oxo,

R_4 is hydrogen, straight or branch chain lower alkyl having 1 to 5 carbon atoms in the alkyl moiety thereof, cycloalkyl or substituted cycloalkyl having 3 to 6 carbon atoms in the cyclic moiety, phenyl, substituted phenyl, phenylalkyl or substituted phenylalkyl of 1 to 5 carbon atoms in the alkyl moiety, wherein the substituents are loweralkyl of 1–5 carbon atoms in the loweralkyl moiety thereof.

9. The adduct of a compound having the formula



the corresponding optical isomer, and mixtures of said optical isomers,

wherein Z, R_1 and R_4 are as defined in claim 1, provided R_1 is other than alkanoyl,

R_2 with R_3 is oxa,

and (alky) is alkylene of 2 to 5 carbon atoms in the alkylene moiety, with a member selected from the group consisting of benzene, loweralkyl and polyloweralkyl substituted benzenes, tetrahydrofuran and polyloweralkyl substituted tetrahydrofurans wherein the substituted benzene nucleus carries 1–6 substituents and the substituted furan nucleus carries 1–4 substituents and lower alkyl contains 1–5 carbon atoms.

4,161,598

1-OXYGENATED-2,6-METHANO-3-BENZAZOCINES

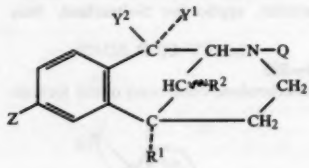
Noel F. Albertson, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 406,199, Oct. 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 257,343, May 26, 1972, Pat. No. 3,823,149, which is a continuation-in-part of Ser. No. 43,556, Jun. 4, 1970, abandoned. This application Jul. 8, 1977, Ser. No. 813,813

Int. Cl.[2] C07D *221/26*

U.S. Cl. 546—97 **18 Claims**

1. 3-Q-6-R^1-11-R^2-1-Y^1-1-Y^2-8-Z-1,2,3,4,5,6-Hexahydro-2,6-methano-3-benzazocine having the structural formula



wherein:

Q is cyclopropylmethyl, cyclobutylmethyl, propyl, allyl or 2-phenylethyl;

R^1 is methyl, ethyl or propyl;

R^2 is hydrogen, methyl or ethyl;

Y^1 taken alone is hydrogen;

Y^2 taken alone is hydroxy; or

Y^1 and Y^2 taken together are oxo; and

Z is hydroxy; and when Y^1 and Y^2 taken together are oxo, Z is also acyloxy selected from the group consisting of acetoxy, propionyloxy, butyryloxy, pivalyloxy, isobutyryloxy, isovaleryloxy, 3,3-dimethylbutyanyloxy, benzoyloxy, p-anisoyloxy, m-anisoyloxy, p-toluyloxy and p-trifluoromethylbenzoyloxy;

or an acid-addition salt thereof.

4,161,599

PROCESS FOR THE PREPARATION OF THIENO(2,3-c)- AND THIENO(3,2-c)PYRIDINES

Jean P. Maffrand, Toulouse, France, assignor to PARCOR, Paris, France

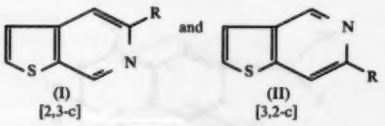
Filed May 23, 1978, Ser. No. 908,857

Claims priority, application France, Jun. 21, 1977, 77 18991

Int. Cl.[2] C09S *495/04*

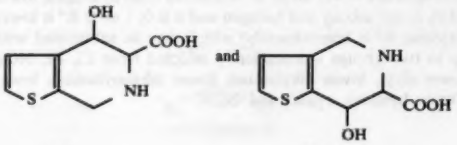
U.S. Cl. 546—114 **1 Claim**

1. Process for the preparation of a compound selected from the compounds having the formulae



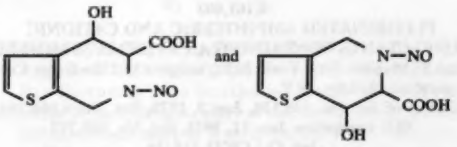
(I) [2,3-c] (II) [3,2-c]

wherein R is selected from hydrogen and carboxy, comprising adding an aqueous solution of an alkali metal nitrite to an acidic solution of a compound selected from the compounds having the formulae



(III) (IV)

to give, respectively, a compound of formulae



(V) (VI)

and then reacting a compound of formula (V) or (VI) respectively with an acid selected from hydrochloric acid, hydrobromic acid, sulfuric acid and trifluoroacetic acid and making the reaction mixture basic with an alkali metal hydroxide, to give the derivatives of formula (I) and (II) respectively, in which R is hydrogen, or reacting said compound (V) or (VI) with an alkali metal hydroxide in aqueous solution at the reflux temperature and subsequent neutralization, to give the derivatives of the formula (I) and (II), respectively, in which R is carboxy.

4,161,600

DEXTRO AND LEVO-6-OXO-2-PIPERIDINECARBOXYLIC ACID QUININE SALTS

Stewart M. Miller, Watchung, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 22, 1976, Ser. No. 753,242

Int. Cl.[2] C07D *453/04*

U.S. Cl. 546—135 **2 Claims**

1. l-6-oxo-2-piperidinecarboxylic acid quinine salt.

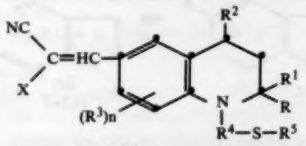
2. d-6-oxo-2-piperidinecarboxylic acid quinine salt.

4,161,601
METHINE DYES FROM 1-[2-[(2-BENZOTHIAZOLYL)THIO]ALKYL]-1,2,3,4-TETRAHYDRO-2,2,4,7-TETRAMETHYLQUINOLINE COMPOUNDS

Clarence A. Coates, Jr., and Max A. Weaver, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 31, 1977, Ser. No. 802,090
Int. Cl.[2] C07D *417/14*
U.S. Cl. 546—176 3 Claims

1. Compounds of the formula:



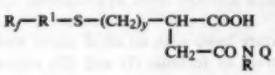
wherein X is selected from cyano, carbamoyl, lower alkyl carbamoyl, lower alkoxycarbonyl, lower alkylsulfonyl and arylsulfonyl; R, R^1, and R^2 are independently selected from hydrogen and lower alkyl; R^3 is selected from hydrogen, lower alkyl, lower alkoxy and halogen and n is 0, 1 or 2; R^4 is lower alkylene; R^5 is benzothiazolyl which may be substituted with up to two groups independently selected from Cl, Br, NO_2, lower alkyl, lower alkylamino, lower alkanoylamino, lower alkoxy, hydroxy, cyano, and -SCN.

4,161,602
FLUORINATED AMPHOTERIC AND CATIONIC SURFACTANTS CONTAINING A PYRIDINIUM MOIETY

Karl F. Mueller, New York, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

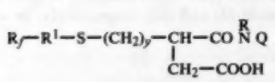
Division of Ser. No. 538,432, Jan. 3, 1975, Pat. No. 4,069,244.
This application Jan. 12, 1978, Ser. No. 868,773
Int. Cl.[2] C07D *213/56*
U.S. Cl. 546—335 11 Claims

1. A compound of the formula



I

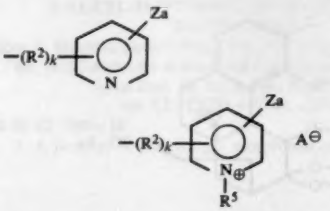
or its amphoteric tautomer or of the formula



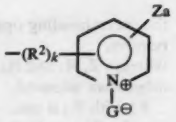
II

or its amphoteric tautomer or a mixture thereof
wherein

R_f is straight or branched chain perfluoroalkyl of 6 to 12 carbon atoms or a perfluoroalkyl of 2 to 6 carbon atoms substituted by heptafluoroisopropoxy on the terminal carbon atom;
R is hydrogen, alkyl of 1 to 6 carbon atoms, or hydroxyalkyl of 1 to 6 carbon atoms;
R^1 is branched or straight chain alkylene of 1 to 12 carbon atoms;
Y is 1 or zero;
Q is a nitrogen containing group selected from aromatic amino groups selected from

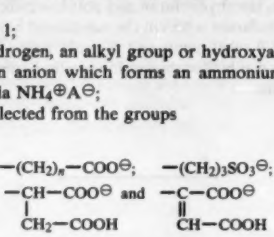


and



wherein

R^2 is a linear or branched alkylene of 2 to 12 carbon atoms, or
k is 0 or 1;
R^5 is hydrogen, an alkyl group or hydroxyalkyl group;
$A^\ominus$ is an anion which forms an ammonium salt of the formula $NH_4^\oplus A^\ominus$;
$G^\ominus$ is selected from the groups



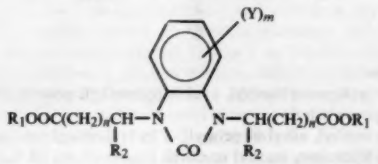
where n is 1 to 5;
Z is halogen or methyl,
a is an integer from 0 to 3.

4,161,603
DICARBOXYLIC ACIDS AND DICARBOXYLIC ACID ESTERS CONTAINING A BENZIMIDAZOLONE RADICAL

Jürgen Habermeier, Pfeffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 6, 1977, Ser. No. 794,694
Claims priority, application Switzerland, May 12, 1976, 5932/76
Int. Cl.[2] C07D *235/26*
U.S. Cl. 548—305 8 Claims

1. A benzimidazolone compound of the formula



in which

the two R_1 independently of one another each denote hydrogen, alkyl of 1 to 4 carbon atoms or phenyl,
the two R_2 independently of one another each denote hydrogen or alkyl with 1 to 10 carbon atoms,
the two n represent identical or different numbers from 2 to 12,
Y represents bromo or chloro, and
m equals zero or denotes a number from 1 to 4.

4,161,604
PROCESS FOR MAKING 1-HYDROXYETHYL-2-UNDECYL-2-IMIDAZOLINE

Charles H. Elster, River Vale, N.J., and Gabriel J. Gibs, Pearl River, N.Y., assignors to Lonza Inc., Bergen, N.J.

Filed Jan. 10, 1978, Ser. No. 868,350
Int. Cl.[2] C07D 233/64
U.S. Cl. 548—352 12 Claims

1. A process for producing a high purity imidazoline comprising the following steps:

(a) reacting a carboxylic acid and at least a 5% molar excess of a diamine in the liquid phase in a reactor under vacuum, thereby forming the imidazoline and water of reaction vapor;

(b) passing at least some of the vaporized water into a first distillation zone having vapor-liquid contact means;

(c) removing water substantially free of the diamine as the distillate from the first distillation zone;

(d) continuing steps (a), (b), and (c) until substantially all of the water of reaction formed has been removed;

(e) thereafter vaporizing and feeding the unreacted diamine into a second distillation zone substantially devoid of any vapor-liquid contact means, thereby obtaining a high purity imidazoline product as the residue in said reaction zone;

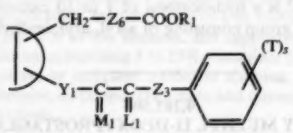
said carboxylic acid having a formula of R^1COOH where R^1 is a hydrocarbyl radical of from 3 to 40 carbon atoms and said diamine having a formula of $NH_2CH_2CH_2NHR^2$ where R^2 is hydrogen or an optionally-substituted alkyl or alkaryl group having from 1 to 15 carbon atoms.

4,161,605
ω-ARYL-CIS-13-PGE COMPOUNDS

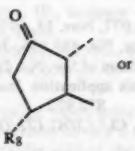
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application Mar. 3, 1977, Ser. No. 774,186
Int. Cl.[2] C07C 177/00
U.S. Cl. 560—53 37 Claims

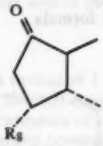
1. A prostaglandin analog of the formula:



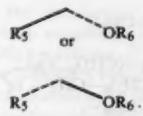
wherein D is



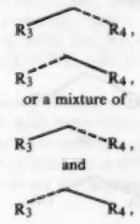
or



wherein R_8 is hydrogen or hydroxy
wherein Y is cis—CH=CH—
wherein Z_6 is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—, or
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
wherein g is one, 2, or 3;
wherein Z_3 is oxa or methylene;
wherein T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that Z_3 is oxa only when R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



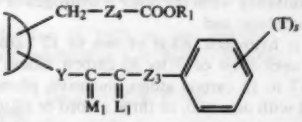
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,161,606
ω-ARYL-CIS-13-INTER-OXA-PGA COMPOUNDS

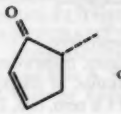
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 774,186, Mar. 3, 1972, which is a division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application May 8, 1978, Ser. No. 904,183
Int. Cl.[2] C07C 177/00
U.S. Cl. 560—53 37 Claims

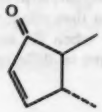
1. A prostaglandin analog of the formula:



wherein D is



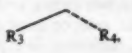
or

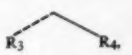


wherein Y is cis—CH=CH—,
wherein Z_4 is
(1) $—CH_2—O—CH_2—(CH_2)_g—CH_2—$,
(2) $—(CH_2)_2—O—(CH_2)_g—CH_2—$, or
(3) $—(CH_2)_3—O—(CH_2)_g—$,
wherein g is one, 2, or 3;
wherein Z_3 is oxa or methylene;
wherein T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl,
wherein M_1 is

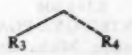
or

or
wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is





or a mixture of



and

and
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro and Z_3 is methylene; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

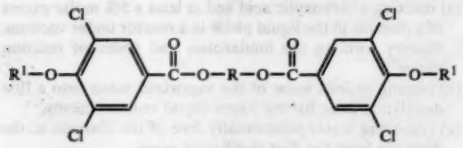
4,161,607

THERMALLY STABLE, RIGID BISPHENOLS

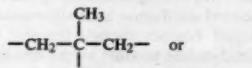
August H. Frazer, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 751,088, Dec. 16, 1976, Pat. No. 4,065,432. This application Oct. 5, 1977, Ser. No. 839,709
Int. Cl.[2] C07C *69/88, 69/90*
U.S. Cl. 560—65 **4 Claims**

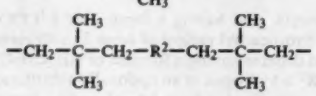
1. The thermally stable, rigid bisphenols of the formula



where R is



or



where
R^2 is an arylene selected from the group consisting of 1,4-phenylenes, 4,4'-biphenylenes and 2,6-naphthylenes, said arylene being unsubstituted or substituted with halo, lower alkyl or phenyl, and
R^1 is hydrogen or

where R^3 is a hydrocarbon of 1 to 10 carbons selected from the group consisting of alkyl, aryl, aralkyl and alkaryl.

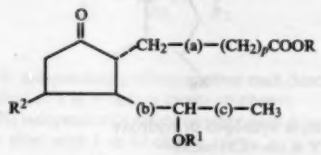
4,161,608

11 HYDROXY METHYL 11-DEOXYPROSTAGLANDIN E_1

Nedumparambil A. Abraham, Dollard des Ormeaux; Jehan F. Bagli, Kirkland, and Tibor Bogri, Montreal, all of Canada, assignors to Ayerst, McKenna and Harrison Limited, Montreal, Canada

Division of Ser. No. 741,077, Nov. 11, 1976, Pat. No. 4,089,898, which is a division of Ser. No. 489,856, Jul. 19, 1974, Pat. No. 4,006,136, which is a division of Ser. No. 238,650, Mar. 27, 1972, Pat. No. 3,849,474. This application Jan. 27, 1978, Ser. No. 872,972
Int. Cl.[2] C07C *177/00*
U.S. Cl. 560—121 **3 Claims**

1. A compound of the formula



in which (a) is CH_2CH_2, p is an integer from 2 to 4, (b) is trans CH=CH, (c) is $(CH_2)_q$ wherein q is an integer from 1 to 6, R is hydrogen or lower alkyl, R^1 is hydrogen and R^2 is CH_2OH.

4,161,609

SYNTHESIS OF CARBOXYLIC ACID ESTERS

Richard D. Cramer, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 14, 1977, Ser. No. 833,371
Int. Cl.[2] C07C *67/20*
U.S. Cl. 560—215 26 Claims

1. A process for the preparation of carboxylic acid esters having the formula $RCOOR_3$ from carboxylic acid amides having the formula $RCONR_1R_2$ and hydroxyl compounds having the formula R_3OH, which comprises contacting at least one mole of said hydroxyl compound with each mole of said amide in the vapor phase at temperatures of from 100° C. to 400° C. and at pressures of from 0.01 to 100 atmospheres in the presence of a solid catalyst having a surface area of 10 to 1000 m^2/g for a contact time of 0.1 to 20 seconds, thereby forming the ester and HNR_1R_2, recovering the ester by condensation of the exit vapors by cooling, and separating HNR_1R_2 from the uncondensed portion of the exit vapors, wherein

R is selected from the class consisting of H; an alkyl group having from 1 to 10 carbon atoms; an alkenyl group having from 2 to 10 carbon atoms; alkynyl having from 2 to 10 carbon atoms; phenyl; and a phenyl group substituted by a methyl, chloro or methoxy group;

R_1 taken separately is selected from the class consisting of H and alkyl groups having from 1 to 10 carbon atoms;

R_2 taken separately is selected from the class consisting of H and alkyl groups having from 1 to 10 carbon atoms;

R_3 is selected from the class consisting of

primary or secondary alkyl group having from 1 to 10 carbon atoms;

primary or secondary alkyl group having from 2 to 10 carbon atoms substituted by a hydroxy group, alkoxy group having from 1 to 4 carbon atoms or an acetoxy group;

phenyl; and

phenyl substituted by 1 or 2 alkyl groups having 1 to 10 carbon atoms, 1 or 2 fluorine atoms, 1 or 2 chlorine atoms, 1 or 2 bromine atoms, a methoxy group or a methoxycarbonyl group;

and the catalyst is selected from the class consisting of titanium dioxide, alumina, zirconium oxide, molybdena, cerium (IV) oxide, mixtures of from 10 to 100% alumina and 90 to 0% silica, mixtures of from 0 to 100% titanium dioxide and 100 to 0% alumina, and supported catalyst compositions comprising 5 to 25% vanadium pentoxide, nickel oxide, or tungsten oxide on alumina, alumina-silica mixtures, or copper (II) oxide and chromium (III) oxide mixtures.

4,161,610

PROCESS FOR PREPARING VINYL ESTERS

Donald L. Klass, Barrington, Ill., assignor to Union Oil Company of California, Brea, Calif.

Filed Sep. 29, 1961, Ser. No. 141,832
Int. Cl.[2] C07C *67/05*
U.S. Cl. 560—243 8 Claims

1. The process of preparing vinyl esters which comprises reacting an olefinic hydrocarbon having 2 to 10 carbon atoms per molecule with a carboxylic acid of the formula

$$R^1(COOH)_m$$

wherein R^1 is a hydrocarbon radical of 1 to 20 carbon atoms and m is an integer of 1 to 5, under substantially anhydrous liquid phase conditions in the presence of a catalytic amount of a member selected from the group consisting of (a) an alkaline earth metal salt of a carboxylic acid within the above-defined group in combination with a noble metal compound selected from the group consisting of palladium, iridium, ruthenium, rhodium, and platinum; and (b) an alkali metal or alkaline earth metal salt of carboxylic acids within the above defined group in combination with a noble metal compound selected from platinum, iridium, ruthenium and rhodium compounds, and a regenerative oxidant capable of maintaining said noble metal in oxidized form.

4,161,611

PROCESS FOR THE PRODUCTION OF 2-METHOXY-3,6-DICHLOROBENZOIC ACID

Dong-Whee Kim, Deerfield, Ill., assignor to Veesicol Chemical Corporation, Chicago, Ill.

Continuation of Ser. No. 654,249, Feb. 23, 1976, abandoned.
This application Jan. 9, 1978, Ser. No. 868,091
Int. Cl.[2] C07C *65/08*
U.S. Cl. 562—474 12 Claims

1. A process for the production of 2-methoxy-3,6-dichlorobenzoic acid which comprises reacting 2-amino-3,6-dichlorobenzoic acid with a minimum of one mole of nitrous acid for each mole of the 2-amino-3,6-dichlorobenzoic acid to form the corresponding diazonium salt, hydrolyzing the diazonium salt, hydrolyzing the diazonium salt to form 2-hydroxy-3,6-dichlorobenzoic acid and methylating said hydroxy acid.

4,161,612

PROCESS FOR PREPARING THIODIGLYCOLIC ACID

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 31, 1978, Ser. No. 892,246
Int. Cl.[2] C07C *149/20*
U.S. Cl. 562—594 9 Claims

1. A process for preparing thiodiglycolic acid which comprises contacting glycolic acid, diglycolic acid or bromoacetic acid and hydrogen sulfide in the presence of aqueous hydrogen bromide at a temperature of from about 90° C. to about 220° C. and a pressure of from about 0.1 atmosphere to about 100 atmospheres.

4,161,613

RECOVERY OF ACRYLIC ACID FROM QUENCH BOTTOMS BY THE ADDITION OF ALUMINUM CHLORIDE

Stephen C. Paspek, Jr., Cleveland, and William A. Every, Twinsburg, both of Ohio, assignors to Standard Oil Company (Ohio), Cleveland, Ohio

Filed Dec. 14, 1977, Ser. No. 860,516
Int. Cl.[2] C07C *51/42, 57/04*
U.S. Cl. 562—600 12 Claims

1. A process for the separation of acrylic acid from an aqueous mixture of acrylic acid and water comprising adding a Group III A metal halide salt to said aqueous mixture in an amount sufficient to form an organic phase containing acrylic acid, and an aqueous phase, and separating the organic phase from the aqueous phase.

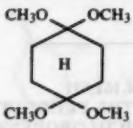
4,161,614

PROCESS FOR THE PREPARATION OF CYCLOHEXANE DIONE-(1,4)-TETRAMETHYL DIKETAL

Elmar Konz, Bad Soden am Taunus, and Rudolf Pistorius, Ober-Mörlen, Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 24, 1978, Ser. No. 871,921
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1977, 2703077
Int. Cl.[2] C07C *41/00*
U.S. Cl. 568—670 5 Claims

1. A process for the preparation of cyclohexanedione-(1,4)tetramethyl diketal of the formula



(II)

which comprises reducing p-benzoquinone tetramethyl diketal with hydrogen in the presence of a hydrogenation catalyst, in a basic medium, at a temperature of from about −10° to +150° C.

4,161,615

DEHYDROGENATION OF CYCLIC KETONES TO BETA-NAPHTHOLS

Werner H. Müller, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

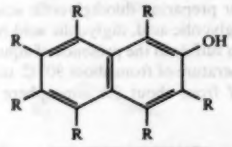
Continuation of Ser. No. 649,496, Jan. 15, 1976, abandoned. This application May 26, 1977, Ser. No. 800,915

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1975, 2501770

Int. Cl.² C07C *39/14*

U.S. Cl. 568—740 **1 Claim**

1. A process for the preparation of 2-hydroxy-naphthalenes of the formula

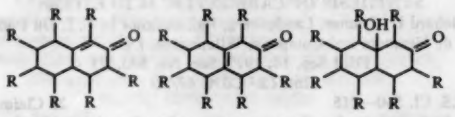


wherein the radicals R are selected from:

(a) hydrogen,

(b) straight chain, branched chain and cyclic alkyl radicals and

(c) phenyl and naphthyl, and adjacent aliphatic radicals R may together form an alicyclic 5- or 6-membered ring, and the R substituents taken together do not contain more than 24 carbon atoms, which comprises heating a cycloalkenone or hydroxycycloalkanone of the formulae II to IV



II III IV

wherein the radicals R are as defined above, in the liquid phase at a temperature of 140° to 350° C. and a pressure of up to 20 atmospheres in a solvent which is a polyglycol dialkyl ether having alkyl groups of up to 6 carbon atoms and a noble metal catalyst of the 8th subgroup of the Periodic System.

4,161,616

ACROLEIN CONVERSION TO BUTANEDIOL

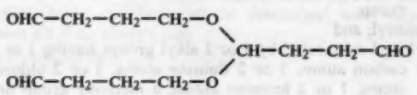
Paul D. Taylor, Corpus Christi, Tex.; Thomas H. Vanderspurt, Gillette, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 24, 1978, Ser. No. 899,052

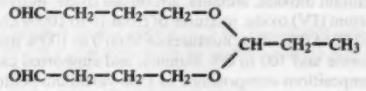
Int. Cl.² C07C *31/18*

U.S. Cl. 568—862 **14 Claims**

1. A process for converting acrolein into 1,4-butanediol which comprises (1) selectively hydrogenating acrolein to a product mixture consisting of at least two moles of allyl alcohol per mole of acrolein and propionaldehyde, (2) subjecting the product mixture to acidic conditions to produce acrolein diallyl acetal and propionaldehyde diallyl acetal, (3) selectively hydroformylating the acetals to form a hydroformylation product mixture of



and



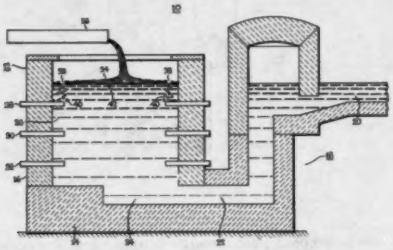
and (4) subjecting the hydroformylation product mixture to substantially neutral aqueous hydrolysis/hydrogenation conditions to yield 1,4-butanediol.

4,161,617

METHOD AND APPARATUS FOR ELECTRICALLY MELTING GLASS

Kenneth S. Hrycik, Eastlake; John H. Leonhardt, Euclid, and William J. Prentice, Jr., South Euclid, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 1, 1978, Ser. No. 901,315
Int. Cl.[2] C03B 5/02
U.S. Cl. 13—6 12 Claims



1. A process for continuously melting a glass batch by heating said glass batch in a furnace having plurality of electrodes disposed in a vertically oriented melting chamber to feed said glass batch at the top level of the chamber and withdraw molten glass at the bottom level of the chamber and further including one set of electrodes located adjacent the top level of the chamber with at least one other set of electrodes located at a lower level of the chamber which comprises:

(a) feeding said glass batch continuously at the top level of the chamber to form a blanket resting on the molten glass,

(b) supplying electrical energy to said lower level electrodes at a rate sufficient to supply molten glass continuously at the bottom level of the chamber, and

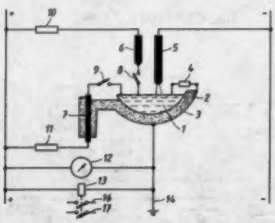
(c) supplying electrical energy to said top level electrodes at a rate sufficient to maintain the batch blanket at relatively constant thickness while generating localized hot spots in the molten glass adjacent said electrodes and causing a flow of gas bubbles upwardly through the glass at said hot spot locations for escape through the batch blanket.

4,161,618

DC ARC FURNACE OPERATION INDICATING SYSTEM

Sven-Einar Stenkvist, Vesteras, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed Feb. 22, 1978, Ser. No. 880,149
Claims priority, application Sweden, Feb. 22, 1977, 7701913
Int. Cl.[2] H05B 7/148
U.S. Cl. 13—12 4 Claims



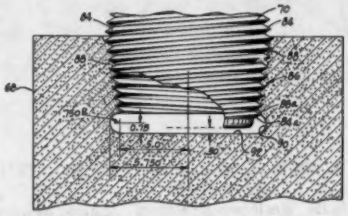
1. A DC arc furnace comprising a hearth having an outside and an inside adapted to contain pieces of solid metal and a melt formed therefrom, at least one arcing electrode adapted to form an arc with said pieces and said melt, at least one melt electrode adapted for melt contact by said melt, a starting electrode adapted to be moved into contact with said pieces to form said melt to a degree effecting said melt contact and to thereafter be moved away from said contact with the pieces, and positive and negative power lines of which the positive line connects with said melt and starting electrodes and the negative line connects with said arcing electrode, whereby a voltage differential is formed between the hearth's said outside and said positive line and which differential is dependent in value on the degree said starting and/or melt contact electrodes form good electric connections with said pieces and said melt respectively, and means for measuring said value.

4,161,619

ELECTRODE SOCKET DESIGN

Kegham M. Markarian, University Heights; Richard D. Matty, Marshallville, and Fred E. Svekric, Euclid, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Nov. 11, 1977, Ser. No. 850,709
Int. Cl.[2] H05B 7/14
U.S. Cl. 13—18 C 12 Claims



1. An electric-arc furnace electrodes comprising an elongate, carbonaceous electrode section having a socket adjacent one end, the socket extending longitudinally from an opening in an end surface of the electrode to a base, the socket having a threaded portion, the socket being adapted when in use to receive a threaded pin, the socket having a base portion between the base and the threaded portion when the electrode is in use such that the pin extends through the length of the threaded portion into the base portion and terminates at a location spaced from the base, the base portion comprising a circumferentially extending fillet having at least one circumferential, radiused surface intermediate the lowermost socket thread and the base of the socket, the base including a transversely extending surface which is as compared with the radiused surfaces relatively flat.

4,161,620

ELECTRIC ARC FURNACE FOR STEEL MAKING, WITH NO REFRACTORY BRICKS AT THE FURNACE WALL

Syoji Nakamura, Osaka, Japan, assignor to Kyoei Seiko Kabushiki Kaisha, Osaka, Japan

Filed Oct. 31, 1977, Ser. No. 847,472
Claims priority, application Japan, Nov. 17, 1976, 51-138684
Int. Cl.[2] F27D 1/12
U.S. Cl. 13—32 3 Claims

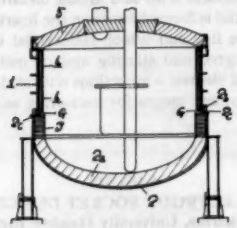
1. An electric arc furnace for use in the manufacture of steel, said furnace comprising:

a furnace bed portion lined with refractory material;

a solid metal shell portion made separately from said bed portion and having an outer diameter which is less than the outer diameter of said bed portion, said shell portion being joined to the top of said bed portion and extending upwardly therefrom; and

a plurality of hollow metal water-cooling boxes arranged in plural layers and attached to and covering the entire inner

surface of said shell portion above the slag line of the furnace, said metal boxes forming the inner furnace wall



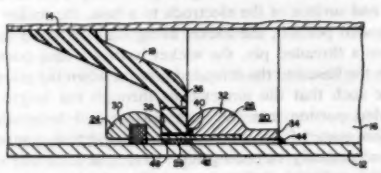
and being directly exposed to the heat in the furnace during use thereof.

4,161,621

SPACER MOUNT FOR A GAS INSULATED TRANSMISSION LINE

Philip C. Bolin, Westborough; Robert J. Lapen, Marlboro, and Alan H. Cookson, Southborough, all of Mass., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 29, 1977, Ser. No. 811,231
Int. Cl.[2] H01B *9/04*
U.S. Cl. 174—14 R **8 Claims**



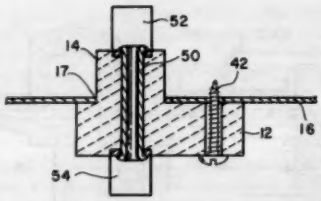
1. A gas-insulated transmission line comprising:
an elongated, cylindrical outer sheath;
an elongated inner conductor disposed within said outer sheath;
an insulating gas disposed within said outer sheath an electrically insulating said inner conductor from said outer sheath;
an insulating spacer having a longitudinal width disposed within said outer sheath and insulatably supporting said inner conductor within said outer sheath; and
a metallic spacer mount for mounting said spacer within said outer sheath comprising;
an annular first member having a longitudinally extending section and a radially-inwardly extending nub; and
an annular second member having a radially-inwardly extending nub, said second member being secured to said first member at said first member longitudinal section, said first and second member nubs being spaced-apart a distance substantially the same as said spacer width, said first member nub, said second member nub, and said first member longitudinal section forming an annular space therebetween, said spacer being disposed within said annular space, said spaced mount being secured to said outer sheath.

4,161,622

INSULATOR ASSEMBLY HAVING NOVEL FEEDTHROUGH PORTION

Sanford A. Drayer, 1270 Village Way, Orlando, Fla. 32807, and Gordon D. Wampler, 11411 NW. 30th St., Sunrise, Fla. 33323

Filed Dec. 22, 1976, Ser. No. 753,211
Int. Cl.[2] H01B *17/26*
U.S. Cl. 174—152 R **1 Claim**



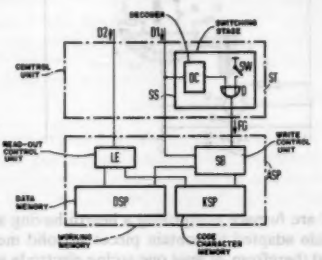
1. A pre-assembled pass-through bushing unit for conducting electricity from one side to the other of an electrically conducting partition having an opening therein comprising:
an insulator device having a main body and an integral feedthrough portion extending outwardly of said main body, said portion being sized to fit through the opening in the partition;
means defining a bore extending completely through said main body and feedthrough portion;
connector means positioned at each end of said bore and having openings aligned therewith;
locking means on said insulator device adjacent opposite ends of said bore cooperating with said connector means to prevent rotation of said connector means with respect to each other and said device;
a hollow conductor snugly received within said bore and said connector openings and having its opposite ends deformed over said connector means to form a rigid unitary assembly; and
means for rigidly removably attaching said device to the partition.

4,161,623

CODE GENERATOR FOR TEXT TRANSMISSION DEVICES

Jürgen Heitmann, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,639
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1977, 2708333
Int. Cl.[2] H04L *15/00*
U.S. Cl. 178—79 **6 Claims**



1. In a code generator for text transmission devices of the type which, in order to allow a subscriber to be recognized, emits code characters assigned to the subscriber over a trunk

line, the code characters being stored in a memory which comprises electrically operable storage elements whose content remains unchanged upon a loss of operating voltage, a write-in control unit being connected to the memory for writing-in code characters, and a read-out control unit being connected to the memory for reading the code characters, the improvement therein comprising:

a line matching unit connecting the write-in control unit to the trunk line for inputting code characters from a central position to the memory via the trunk line over which normal text transmission occurs.

4,161,624

HANDS-FREE TELEPHONE WITH CASCADED ATTENUATORS

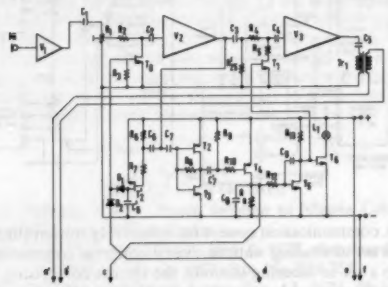
Jörgen Brosow, Elsenwang, Austria, assignor to Dasy Inter S.A., Genf, Switzerland

Filed Aug. 25, 1977, Ser. No. 827,752

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1976, 2638286

Int. Cl.² H04M *1/60*

U.S. Cl. 179—1 HF **11 Claims**



1. In a hands free telephone set including a transmit channel connected to a microphone, a receive channel connected to a loudspeaker and a control circuit connected between said channels to determine the transmission direction of said set by voice controlled switching, each of said channels comprising a first or preamplifier and a second or final amplifier; the improvement wherein each said channel also comprises a first attenuator inserted before the respective said first amplifier and a second attenuator inserted before the respective said second amplifier, said control circuit comprising a separate first delay circuit for each of said transmit and receive channels, the input of said first delay circuits being fed with the preamplified voice signal of the respective channel, the output signal of each said first delay circuit being coupled as an attenuating-signal to the first attenuator of the respective other channel and to a separate second delay circuit, the output signals of said second delay circuits being applied as attenuating signals to the second attenuator of the respective channel.

4,161,625

METHOD FOR DETERMINING THE FUNDAMENTAL FREQUENCY OF A VOICE SIGNAL

Harald Katterfeldt, Ulm, and Helmut Mangold, Aufheim, both of Fed. Rep. of Germany, assignors to Licentia, Patent-Verwaltungs-G.m.b.H., Frankfurt, Fed. Rep. of Germany

Filed Mar. 28, 1978, Ser. No. 891,144

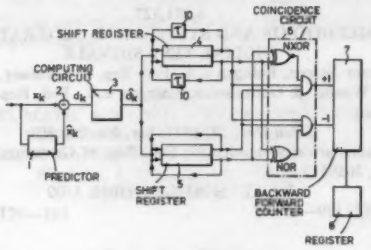
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1977, 2715411

Int. Cl.² G10L *1/02*

U.S. Cl. 179—1 SC **7 Claims**

1. A method of determining the fundamental frequency of a voice signal comprising:

feeding the original voice signal to a predictor to form an estimated voice signal; subtracting said estimated voice signal from said original voice signal to form a difference signal; auto correlating only the significant characteristic



of said difference signal; and determining the maxima of the correlation coefficients as a measure of the fundamental frequency.

4,161,626

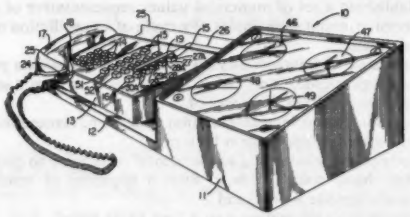
TELEPHONE TIME RECORDER

Tim R. Waldo, 6542 Blain, Fremont, Mich. 49412

Filed Jan. 25, 1978, Ser. No. 872,012

Int. Cl.² H04M *15/18*

U.S. Cl. 179—7.1 R **10 Claims**



1. In a telephone having a receiver, a receiver retainer, and a plurality of push buttons connected to a plurality of telephone call lines with a disconnect switch connected to the telephone call lines so as to be responsive to displacement of said receiver from said retainer to transmit a call when closed and to terminate the call when opened, a telephone call monitoring device for measuring the elapsed time of usage of selected ones of said telephone call lines for calls initiating from said telephone comprising a monitoring circuit including a plurality of timers electrically connected in parallel to one another in said monitoring circuit, a stop switch and means electrically connecting said stop switch in series with each of said timers, said stop switch switchable between conductive and non-conductive electrical states, start switch means associated with each said timer including a plurality of start switches mounted in a elongated strip, said strip positioned adjacent a set of said buttons, each said start switch being a reed switch mounted adjacent a respective one of said push buttons and switchable between conductive and non-conductive electrical states, activating members including magnetic means associated with each button of said set and its associated start switch, said activating members operative to switch an associated one of said start switches when its associated button is moved transversely of said strip, each of said timers in said monitoring circuit having an associated said start switch and being energized when its associated start switch and said stop switch are in conductive states and being deenergized when one of its associated start switch and said stop switch is in a non-conductive state, and accumulating means associated wih each of said timers for cumulatively storing and displaying the aggregate

time lapse resulting from a series of calls as measured by the time duration that its respective timer is energized.

4,161,627

METHOD OF AND SYSTEM FOR GENERATING DIGITAL TEST SIGNALS

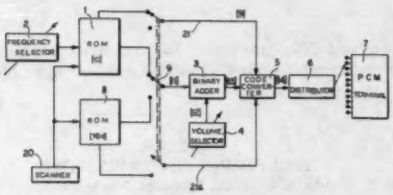
Bertram Amann, Eningen u.A., Fed. Rep. of Germany, assignor to Wandel & Goltermann, Eningen u.A., Fed. Rep. of Germany

Filed Dec. 29, 1977, Ser. No. 865,501

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1976, 2659512

Int. Cl.[2] H04J *3/14;* **H04L** *3/00*

U.S. Cl. 179—15 BF **10 Claims**



1. A method of generating digital test signals simulating an oscillation of pseudo-logarithmically compressed selectable amplitude, comprising the steps of:

establishing a set of numerical values representative of successive amplitude samples of a cycle of an oscillation to be simulated;

quantizing said numerical values in conformity with a pseudo-logarithmic compression characteristic to form a series of basic multibit code words;

generating a supplemental multibit code word representing a quantized multiplication factor;

algebraically adding said supplemental code word to each of said basic code words to form a sequence of resulting multibit code words; and

transmitting said sequence to a load to be tested.

4,161,628

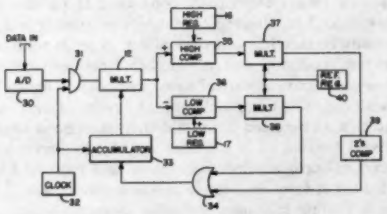
TECHNIQUE FOR TRACKING AMPLITUDE FADES FOR MULTI-AMPLITUDE SIGNALLING

Daniel D. McRae, West Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jan. 31, 1978, Ser. No. 873,834

Int. Cl.[2] H04J *3/04;* **H04B** *1/10*

U.S. Cl. 179—15 BL **11 Claims**



1. In a data communication system wherein transmitted data signals may occupy amplitude levels at and between upper and lower values of the same polarity, a method of adjusting the amplitudes of received data signals comprising the steps of:

multiplying the amplitude of each received data signal by an adjustable gain coefficient to obtain a gain product signal;

comparing said gain product signal with first and second reference values representative of gain products corresponding to said upper and lower values of the amplitude levels capable of being occupied by transmitted data signals; and

adjusting the value of said gain coefficient so as to make the percentage of time that said first reference value is exceeded by gain product signals equal to the percentage of time that said second reference value exceeds gain product signals.

4,161,629

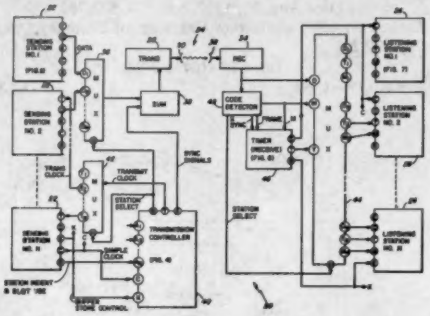
COMMUNICATION SYSTEM WITH SELECTABLE DATA STORAGE

Arent H. Kits van Heyningen, Newport, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 6, 1978, Ser. No. 875,702

Int. Cl.[2] H04J *3/16*

U.S. Cl. 179—15 BA **7 Claims**



1. A communication system for selectively transmitting data from a set of sending stations over a common communication link to a set of listening stations, the system comprising:

a register means located in each of said sending stations for the storage of samples of data to be transmitted by said system;

each of said register means having slots serially connected for the storage of data, there being terminals coupled to respective ones of the slots;

each of said sending stations further comprising switching means coupled to said register means for selecting a pair of terminals of said register means, one of said terminals being a data input terminal and the other of said terminals being a data output terminal, the slots coupled between said input and said output terminals being designated for data storage, all data of said sending stations being coupled via said output data terminal to said common communication link; and wherein

each of said listening stations comprises a corresponding register means and a corresponding switching means coupling said register means to said communication link.

4,161,630

CIRCUIT ARRANGEMENT FOR USE IN TELEPHONE SYSTEMS

James P. Bennett, Duffield, and David C. Harms, Beeston, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Nov. 29, 1977, Ser. No. 855,564

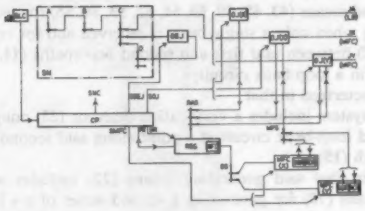
Claims priority, application United Kingdom, Dec. 3, 1976, 50451/76

Int. Cl.[2] H04M *7/06*

U.S. Cl. 179—18 EB **8 Claims**

1. An automatic telephone exchange employing registers for the setting-up of connections over junctors of at least one group of outgoing junctions which employ forward and backward multi-frequency code signalling, wherein said junctors are accessible from a group of multi-frequency control equip-

ments each having a sender and receiver compatible with said multi-frequency code signalling characterised in that a cross-point switching means is provided for establishing selective two-way signalling connections between said registers and the multi-frequency control equipments of at least said group, in which circuit arrangements are provided at each register and at each said control equipment and said circuit arrangements comprise signal transmitting and receiving means whereby any



2-out-of-N signal presented locally in parallel-marking form to the transmitting means of the register or the multi-frequency control equipment effects generation of a corresponding signal in serial form which is transmitted as an N-bit sequence over a single bi-directional wire of the particular selective connection and is operative in the receiving means of the multi-frequency control equipment or register respectively to effect reproduction of the signal in parallel-marking form.

4,161,631

PICKUP CARTRIDGE

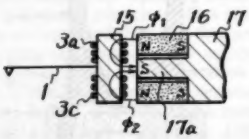
Hitoshi Matsuda, Tokyo, Japan, assignor to Nippon Columbia Kabushikikaisha, Tokyo, Japan

Continuation of Ser. No. 639,189, Dec. 9, 1975, abandoned. This application Jul. 13, 1978, Ser. No. 924,354

Claims priority, application Japan, Dec. 13, 1974, 49-143218

Int. Cl.[2] H04R *9/16*

U.S. Cl. 179—100.41 D **2 Claims**



1. A pickup cartridge comprising:

a cantilever,

a cross-shaped armature with four legs attached to said cantilever,

a damper attached to said armature,

a suspension wire means for supporting said cantilever and said armature and extending through said damper,

holding means disposed at the rear of said damper and including at least a magnet with north and south poles, said suspension wire means being attached thereto, and

electromagnetic pickup means including axially aligned first and second coils of the same number of turns connected in series mounted on first and second axially aligned legs of said armature, third and fourth coils of the same number of turns connected in series mounted on third and fourth axially aligned ledgs of said armature, said first and second coils aligned at 90 degrees to said third and fourth coils, said armature being disposed such that magnetic flux generated by said magnet and passing through said armature is varied when the distance between the four legs of said armature and said magnet is changed so as to induce a voltage in said first, second, third and fourth coils wound on said armature, said magnetic flux which passes through said coils passing in the direction of the axes of said coils and being not parallel to the direction determined by a line between the north and south poles of said magnet and said first coil moving toward said magnet when said second coil moves away from said magnet and said third coil moving toward said magnet when said fourth coil moves toward said magnet to produce a linear push-pull output.

4,161,632

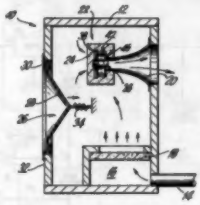
PNEUMATIC ACOUSTIC TRANSDUCER WITH FERROMAGNETIC FLUID VALVE

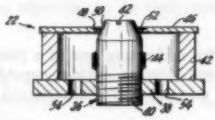
Dan Sibalis, 90 Gold St., New York, N.Y. 10038

Filed Jul. 5, 1978, Ser. No. 922,067

Int. Cl.[2] H04R *23/00*

U.S. Cl. 179—113 **7 Claims**





1. An acoustic transducer for modulating a stream of flowing fluid in accordance with an audio signal comprising, a variable magnetic field, ferromagnetic fluid disposed across said magnetic field in said stream, and means for varying said magnetic field in accordance with said audio signal to thereby vary the flow resistance of said ferromagnetic fluid to modulate said stream.

4,161,633

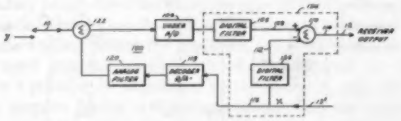
SUBSCRIBER LINE/TRUNK CIRCUIT

Robert Treiber, Centerport, N.Y., assignor to International Telephone & Telegraph Corp., Nutley, N.J.

Continuation of Ser. No. 773,713, Mar. 2, 1977, abandoned. This application May 8, 1978, Ser. No. 903,458

Int. Cl.[2] H04B *3/20;* **H04M** *9/08*

U.S. Cl. 179—170.2 **37 Claims**



1. A line circuit for providing an interface between at least a subscriber line carrying bidirectional analog communication signals and a digital circuit, said line circuit being subject to undesired line signal return from a two-wire to four-wire conversion means provided therein, comprising:

analog-to-digital coder means for converting said analog communication signals to digital signals;

digital signal processing means for selectively attenuating said digital signals coupled thereto from said analog-to-digital coder and for subtracting from said attenuated digital signals said undesired line signal return present in

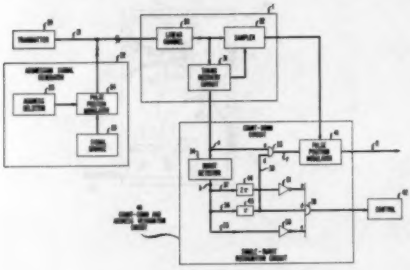
said line circuit to provide a composite digital output signal representative of said analog communication signals substantially without the presence therein of said undesired line signal return; and

means for coupling said composite digital output signal to said digital circuit.

4,161,634
COUNT-DOWN ADDRESSING SYSTEM

Jules A. Bellisio, Wall Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 31, 1978, Ser. No. 929,431
Int. Cl.[2] H04B *3/46*
U.S. Cl. 179—175.31 R **8 Claims**



1. Apparatus for addressing one of a plurality of n remote stations distributed along a system capable of transmitting electromagnetic wave energy characterized in that said apparatus includes:

an addressing signal generator (22) coupled to said system (20, 21, i) for generating an addressing signal comprising a series of m signal bursts, where m is an integer between one and n, and designates the station to be addressed;

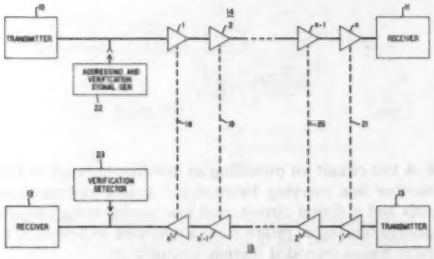
means (33, 34, 41, 43) at each of said stations for deleting one burst from said series and for retransmitting a series of bursts having one less than the number received;

and further means (34, 38, 43, 44, 50, 51) for recognizing that only a single addressing burst is received.

4,161,635
ADDRESS VERIFICATION SYSTEM

Dan H. Wolaver, Edison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 31, 1978, Ser. No. 929,435
Int. Cl.[2] H04B *3/46*
U.S. Cl. 179—175.31 R **5 Claims**



1. An address verification system for use in a communication system including a first wavepath (14) having a plurality of n remote addressable stations (1, 2, . . . n) distributed therealong for transmitting signals in a first direction, and a second wavepath 15 having a second plurality of n' remote addressable stations (1', 2', . . . n') distributed therealong for transmitting signals in a second direction opposite to said first direction;

generating means (22), coupled to said first wavepath at a point therealong, for generating a series of i addressing signal bursts for addressing the i^{th} addressable station therefrom, where i is an integer between one and n;

first means (43, 44, 45, 46, 47) at each of said stations for deleting one burst from said series and for retransmitting a series of bursts having one less than the number received;

second means (43, 48, 49, 50, 51, 52, 53, 54, 55) for recognizing when only a single burst is received and for coupling (32) between said first and second wavepaths (14, 15) to form a loop-back circuit;

characterized in that

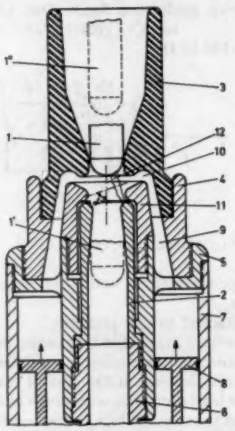
said system includes a verification detector (23) coupled to said loop-back circuit at a point along said second wavepath (15);

and in that said generating means (22) includes selector means (70) for generating a second series of p+1 signal bursts, where p is equal to the number of addressable stations in the loop-back circuit between said generating means (22) and said verification detector (23).

4,161,636
ARC EXTINGUISHING ARRANGEMENT FOR GAS BLAST TYPE CIRCUIT BREAKER

Heribert Maier, Dietikon, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Apr. 27, 1976, Ser. No. 680,800
Claims priority, application Switzerland, Jun. 18, 1975, 7905/75
Int. Cl.[2] H01H *33/88*
U.S. Cl. 200—148 A **9 Claims**



1. In an electrical circuit breaker of the gas blast type comprising a pair of contact members disposed within an arc quenching zone of a chambered part at which separation of the contact members takes place and an arc is established therebetween, the improvement wherein an annular blast gas in-flow duct surrounds said arc quenching zone and through which the gas is forced by piston action in the direction of said quenching zone, and the discharge end of said in-flow duct includes a gas deflection zone constituted by a fixed ring-shaped duct which lies at an acute angle to the axis of the quenching zone, said angle being in the range of from 45° to 60° for preventing blow-back of hot arc extinction gases formed in the quenching zone through said in-flow duct in the opposite direction.

4,161,637

PUSHBUTTON SWITCH

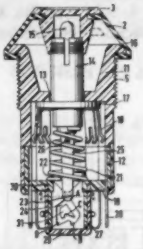
Wolfgang Priesemuth, Wendelbornweg 12, D-2210 Itzehoe-Nordoe, Fed. Rep. of Germany

Filed Feb. 22, 1977, Ser. No. 770,827

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1976, 2606551

Int. Cl.[2] H01H *3/00*

U.S. Cl. 200—153 J 8 Claims



1. A pushbutton switch which includes in combination: a housing, a reciprocable actuating member arranged coaxially within said housing and movable from a first position representing its inactive position to a second position representing its active position, and vice versa, movable switch contacts supported by said actuating member so as to be movable therewith, a locking device associated with said actuating member and comprising a connecting link guide and guiding pin means in engagement with and very accurately guided by said connecting link guide, single spring means operatively connected coaxially to said actuating member and continuously urging the same to said first position, stationary switch contacts arranged on said switch housing, said locking device being operable in response to said actuating member reaching said second position to lock said actuating member in said second position, in which said movable and stationary switch contacts electrically contact each other, said actuating member also being movable out of said second position to allow said spring means to return said actuating member to said first position without any danger of tilting and binding, a link member having one end freely movably linked to said reciprocable member, said housing having a bottom having said contacting link guide fixedly connected thereto, said guiding pin means being connected to the other end of said link member, a divided housing extension extending outwardly from said bottom and arranged inwardly of said stationary switch contacts, one section of said divided housing extension containing said connecting link guide and forming a part of said bottom, and the other section of said extension forming a detachable cover.

4,161,638

VACUUM INTERRUPTER LATCH RELEASE MECHANISM

Robert H. Ettinger, Pittsfield, Mass., assignor to General Electric Company, N.Y.

Filed May 12, 1978, Ser. No. 905,168

Int. Cl.[2] H01H *3/30*

U.S. Cl. 200—153 SC 9 Claims

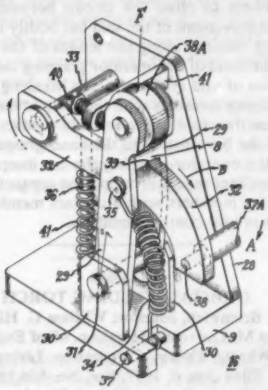
1. A latch release mechanism for operating a moveable electrical terminal comprising:

support means for carrying the latch release mechanism in operational relationship with the terminal;

a trigger action arm pivotally mounted upon the support for retaining electrical contacts in a closed position against a driving force when the trigger action arm is in a first position and for allowing the electrical contacts to open when the trigger action arm is in a second position;

a support arm assembly pivotally connected to a base portion of the support by means of a pair of upright plates at one end and having means on the other end for opposing the force and keeping the electrical contacts in the closed position and for releasing the force to open the electrical contacts in cooperation with said trigger action arm;

a catch means on the trigger action arm for engaging with a stop means on the support arm assembly; and



a first spring pivotally attached at one end to the support arm assembly proximate the stop means and pivotally attached at the other end to the base support.

4,161,639

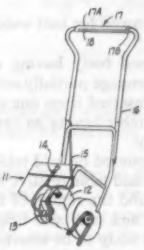
HANDLE SAFETY SWITCH

Thomas J. Nofel, Brookpark, Ohio, assignor to MTD Products Inc., Cleveland, Ohio

Filed Jul. 1, 1977, Ser. No. 812,178

Int. Cl.[2] H01H *9/06, 13/08*

U.S. Cl. 200—157 6 Claims



1. A safety switch for controlling the operation of a motor of an appliance having a handle held by the operator of the appliance while walking behind the appliance, the combination of a hollow hand grasping member removably mounted on the handle in a position to be grasped by the operator, said hand grasping member having a slot along substantially the length thereof and a bar extending longitudinally therealong and protruding into said slot in said hand grasping member, a single serpentine resilient means carried by the hand grasping member in said slot along the length thereof and positioned to resiliently urge the said bar outwardly of the hand grasping member substantially equally along the length of the bar to permit the bar to move bodily relative to the hand grasping member and to permit the bar to tilt relative to the hand grasping member, electric contact members carried by the hand grasping member adjacent the opposite ends thereof, said electric contact members being electrically connected to said motor for the control of the operation of the motor, an electric conducting member within said bar and extending outwardly

at each end of said bar to move therewith, said electric conducting member electrically engaging said contact members under the bias of said resilient means, the said bar urged outwardly of said hand grasping member under the bias of said resilient means holding said engaging portions of the electric conducting member in electric contact with both said electric contact members to close the circuit between said contact members, the movement of the said bar bodily inwardly of the hand grasping member along the length of the hand grasping member by the hand of the operator grasping the bar in opposition to the bias of said resilient means breaking the contact of both the engaging members with the contact members, respectively, to open the circuit between said contact members, and the tilting of the bar relative to the hand grasping member by the hand of the operator grasping the bar in opposition to the bias of said resilient means breaking the contact of at least one of the engaging members with a contact member to open the circuit between said contact members.

4,161,640

ORBITAL WELDING TORCH

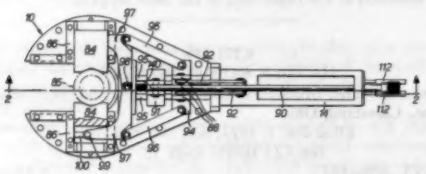
Robert A. C. Bromwich, Marlow; William G. Hill, Beckenham, and Charles M. Lawrence, Horsham, all of England, assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jun. 6, 1977, Ser. No. 804,198

Claims priority, application United Kingdom, Jun. 4, 1976, 23252/76

Int. Cl.² B23K *37/02*

U.S. Cl. 219—60 A **16 Claims**



1. An orbital welding torch for butt welding tubes comprising:

(a) a horse-shoe shaped body having an open mouth to enable said body to engage partially around the tubes to be butt welded when inserted from one side of the tubes,

(b) a crescent shaped table having an open mouth rotatably carried by said body,

(c) a welding head mounted on said table,

(d) means for rotating said table relative to said body so as to orbit said head around the region of the weld, said open mouth of said body and said table being capable of alignment to enable said body to be inserted from one side of the tube to engage partially around the tube,

(e) a pair of clamping blocks arranged to move in a direction which is substantially diametric relative to the tubes when the torch is in position to make a weld and is substantially transverse to the direction of insertion of the body whereby, once the torch has been inserted from one side of the tubes so that the body extends partially around the tubes, and

(f) clamping means for moving said clamping blocks, comprising two cranks, each of said cranks being pivoted at one end to one of said clamping blocks and at the other end to the other of said cranks, a slideable block movable with respect to said body, a pair of crank links, each of said crank links being pivoted at one end to said block and at the other end to one of said cranks at a point between the ends of said one crank, a fixed block immovable with respect to said body, a lever pivoted at one end to said fixed block, and a lever link pivoted at one end to said slideable block and at the other end to said lever whereby moving said lever toward the plane of the body will cause said slideable block to move toward said tubes so that said crank links rotate said cranks to move said clamping blocks against said tubes to hold said torch in place during the making of a weld.

4,161,641

EDM PROCESS AND APPARATUS FOR OVERCUT MACHINING OF A WORKPIECE BY AN ELECTRODE TOOL

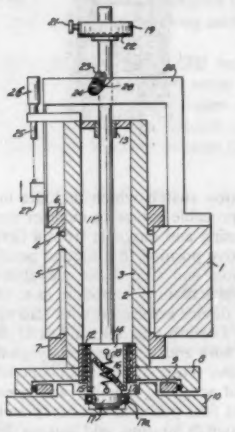
Benno Bonga, Crans, Switzerland, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

Filed Dec. 9, 1977, Ser. No. 859,219

Claims priority, application Switzerland, Dec. 14, 1976, 15688/76

Int. Cl.² B23K *9/16*

U.S. Cl. 219—69 M **30 Claims**



1. In a process for EDM machining an electrode workpiece by means of an electrode tool wherein said electrodes are displaced one relative to another from an initial relative position simultaneously along an axis of penetration of the electrode tool within the electrode workpiece and in a direction perpendicular to said axis, such relative displacement being controlled from the start of a machining operation such as to maintain a predetermined machining gap between the electrode tool and the electrode workpiece, the improvement comprising monitoring the moment at which a predetermined machining dimension is achieved, retracting the electrode tool at such moment, following said retraction by a further advance of said electrode tool, and progressively changing the radial direction of translation motion between the beginning of said retraction and the end of said advance.

4,161,642

CUTTING AND GOUGING HEAD FOR WELDING EQUIPMENT

Walter Arnason, 807 2nd Avenue, Castelgar, British Columbia, Canada (V1N 1L2)

Filed Nov. 18, 1977, Ser. No. 852,857

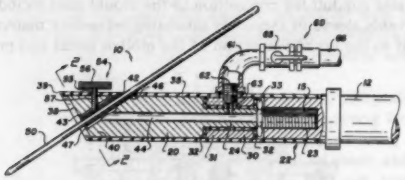
Claims priority, application Canada, Nov. 29, 1976, 266772

Int. Cl.² B23K *9/00*

U.S. Cl. 219—70 **6 Claims**

1. A cutting and gouging head for an electrode holder of an electric arc welder comprising an electrically conductive body having a longitudinal passage extending between inner and outer ends of said body, couplings means for electrically connecting the inner end to the holder, insulating means electrically isolating exterior portions of the body; said outer end having an end face, a bore, and a counterbore connected to the longitudinal passage and open to said end face; a tubular member mounted in the bore to extend longitudinally of the counterbore, said tubular member having an outer surface spaced

from an inner surface of the counterbore to define therewith an annular jet nozzle of a constant volume, clamping means on the outer end adapted to secure an electrode rod within the tubular member with one end of said electrode rod projecting beyond



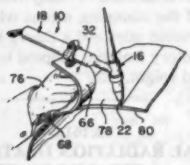
the end face, and air supply means mounted on the body for supplying pressurized air to the longitudinal passage whereby air is discharged from the annular jet nozzle to flow longitudinally of the electrode rod as a substantially annular stream.

4,161,643

WELDING HANDLE ASSEMBLY

Timothy J. Martin, Jr., 1328 Pangborn Rd., Lynden, Wash. 98264, and David C. Waschke, 7017 Mission Rd., Everson, Wash. 98247

Filed Oct. 28, 1977, Ser. No. 846,440
Int. Cl.[2] B23K *9/32*
U.S. Cl. 219—70 **28 Claims**



1. A welding apparatus adapted to form a weld on a work piece having a weld location at which said weld is to be made. and an exposed surface area spaced from said weld location, said apparatus comprising in combination:

a. a welding probe having a first lengthwise axis and having an operating end adapted to be placed in proximity to said weld location of said work piece to form a weld at said weld location,

b. a main handle having a forward end to which said probe is mounted, said main handle having a second lengthwise axis extending laterally from said first lengthwise axis,

c. an auxiliary handle assembly connected to said main handle, said auxiliary handle assembly comprising:

1. a handle portion pivotally connected to said main handle and having a third lengthwise axis extending laterally from said second lengthwise axis, said handle portion having a forward portion and a rearward portion, a length dimension and width dimension such that it can be grasped in the palm of a person's hand, with fingers of the hand spaced along the lengthwise axis of the handle portion, said handle portion having an upper end by which it is attached to said main handle, and also a lower end, the lengthwise dimension of the handle being such that the lower end thereof extends at least to a heel portion of the hand grasping the handle portion,

2. insulating means mounted to said handle portion comprising:

a. a first insulating portion mounted to said handle portion and having a protective surface spaced forward of said handle a sufficient distance to be positioned forward of the hand grasping the handle portion, said protective surface having lengthwise and a width dimensions sufficient to provide protection from radiant heat emitted from the location of the operating end of the probe at the weld location, and

b. a second insulating portion spaced rearward of said handle portion at said lower end of said handle portion, said second insulating portion having an upper surface adapted to engage the heel of the hand grasping the handle portion, and lower surface adapted to be positioned against the exposed surface of the work piece, to provide protection from conducted heat in said work piece,

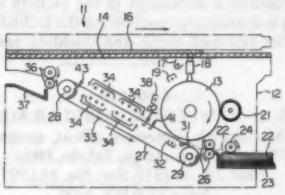
whereby a person is able to operate said apparatus by grasping the handle portion and resting the heel of the hand on the exposed surface of the work piece with the second insulating portion positioned therebetween, and with the operating end of the probe being positioned in proximity to the weld location.

4,161,644

ELECTROPHOTOGRAPHIC APPARATUS COMPRISING IMPROVED THERMAL FIXING MEANS

Nobuyuki Yanagawa; Tsutomu Watanabe, and Kazuaki Tagawa, all of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1977, Ser. No. 834,983
Claims priority, application Japan, Sep. 24, 1976, 51/114493
Int. Cl.[2] H05B *1/00*; G03G *15/20*
U.S. Cl. 219—216 **7 Claims**



1. An electrophotographic apparatus comprising:

electric heater means for thermally fixing a toner image to a copy sheet;

power source means operative to supply full electric power and partial electric power to the heater means; and

switch means connected to the power source means and the heater means for controlling the power source means to normally supply partial power to the heater means and to supply full power to the heater means for a predetermined length of time as the copy sheet passes through the heater means;

the switch means being constructed to sense passage of the copy sheet through the heater means;

the switch means comprising a first switch provided at an inlet of the heater means which is actuated by engagement with the copy sheet and a second switch provided at an outlet of the heater means which is actuated by engagement with the copy sheet;

the first switch controlling the power source means to switch from partial power to full power and the second switch controlling the power source means to switch from full power to partial power;

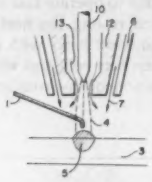
the switch means further comprising a third switch provided between the inlet of the heater means and the first switch which is actuated by engagement with the copy sheet and means for selectively enabling the first and third switches during a single copy operation and a multiple copy operation respectively.

4,161,645

ARC WELDING APPARATUS AND METHOD

Wataru Shimada, and Seigo Hiramoto, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 534,186, Dec. 19, 1974, abandoned.
This application Aug. 10, 1976, Ser. No. 713,032
Claims priority, application Japan, Dec. 19, 1973, 48/143176
Int. Cl.[2] B23K 9/16
U.S. Cl. 219—137 R 8 Claims



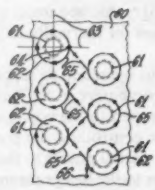
5. An arc welding method comprising the steps of:
- disposing a non-consumable electrode within a guide nozzle such that said electrode is axially recessed within said nozzle;
- creating an arc between said non-consumable electrode and a base metal;
- continuously surrounding said non-consumable electrode with an inert gas fed from said guide nozzle;
- shielding said arc and restricting the radial extent thereof by feeding a shielding gas having carbon dioxide therein outside the periphery of said arc and said inert gas; and
- laterally feeding a deoxidizer in the vicinity of the arc for causing a deoxidizing reaction for the melted metal, generated from said base metal, and shielding gas.

4,161,646

METHOD OF WELDING TUBULAR MEMBERS

Ronald O. McCormick, Columbus, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 8, 1977, Ser. No. 813,997
Int. Cl.[2] B23K 9/00
U.S. Cl. 219—121 EM 5 Claims



1. In a method of welding wherein a group of tubular members are welded to a plate, the improvement comprising:
- directing a welding beam along a continuous path extending peripherally of the tubular members and between the tubular members.

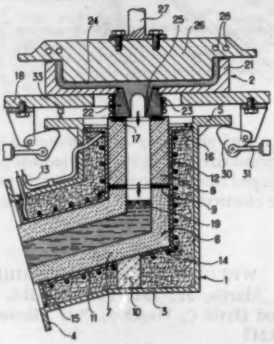
4,161,647

ELECTRICALLY HEATED SPIGOT FOR CONNECTING AN ELECTROMAGNETIC SUPPLYING PUMP TO THE INLET OF A LOW PRESSURE CASTING MOULD

Henri Carbonnel, 11 avenue Beausejour, 92160 Antony, France

Filed Nov. 29, 1977, Ser. No. 856,770
Int. Cl.[2] F24H 1/18
U.S. Cl. 219—301 12 Claims

1. A spigot for connecting the inlet of a low pressure casting mould to a pipeline connected to an electromagnetic pump for supplying the mould with molten metal, said spigot being adapted to be clamped by clamping means against the inlet to the mould, said spigot comprising: an inner refractory supply conduit; an external metal jacket surrounding said conduit; and thermally insulating means surrounding said conduit and thermally separating said conduit from said jacket; wherein that end of said conduit for connection to the mould inlet includes a removable sleeve of thermally insulating refractory material resistant to the corrosive action of the molten metal and provided, at its inner end, with a first gasket through which said sleeve bears on a part of said conduit and, at its outer end, with a second gasket through which, in use, the mould inlet will bear on said sleeve, said sleeve being held in place in said spigot by the effect of the clamping means which in use clamp said spigot to said mould inlet and a sleeve housing bounding said insulating refractory material adapted to enable release of said sleeve from said spigot.

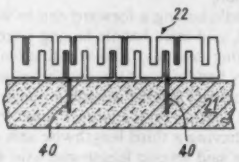


4,161,648

ELECTRICAL RADIATION HEATER FOR A GLASS CERAMIC PLATE

Gerhard Göessler, Oberderdingen, Fed. Rep. of Germany, assignor to E. G. O. Elektro-Geraete Blanc und Fischer, Fed. Rep. of Germany

Filed Nov. 3, 1976, Ser. No. 738,517
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1975, 2551137
Int. Cl.[2] H05B 3/68
U.S. Cl. 219—464 22 Claims



1. An electrical radiation heater for a glass ceramic plate, which forms a cooking plate, comprising:
- support means for said glass ceramic plate; a lining made from highly thermally insulating, temperature-resistant material disposed in said support means;
- a thin sheet, having a substantially flat upper surface consisting of high temperature-resistant insulating material, said sheet comprising a fibrous material and an inorganic binding agent, said sheet being disposed beneath said ceramic plate, disposed on said lining;
- a heating conductor strip disposed on said sheet, insulating and temperature resistant ring means located in said support means and engaging over the outer periphery of said sheet to hold the latter down on said lining at its outer

periphery, said sheet and said ring means having greater mechanical strength and lower thermal insulating characteristics than said lining; said heating conductor strip being relatively thick and having slits extending alternately from opposite edges thereof to define a zig-zag shape in said strip, said heating conductor strip furthermore having a back and forth curvature to define a serpentine form and being in edge-on engagement with said upper surface;

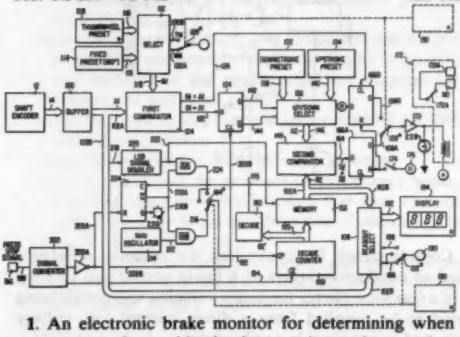
a plurality of anchoring tab means formed integrally with said conductor strip, said tab means projecting from said sheet engaging edge at spaced intervals and being at least partially pierced through said insulating sheet; and,

electrical terminal connection means for said conductor strip.

4,161,649
MULTIMODE ELECTRONIC BRAKE MONITOR SYSTEM

Ted Klos, Greenfield, and Herman J. Tiedt, Brookfield, both of Wis., assignors to American Motors Corporation, Southfield, Mich.

Filed Dec. 21, 1977, Ser. No. 863,045
Int. Cl.[2] G06M *3/02*; G07C *3/00*
U.S. Cl. 235—92 MP **12 Claims**



1. An electronic brake monitor for determining when the braking time of a machine having a reciprocating member and means for braking said member and means for initiating said braking means exceeds at least one of a plurality of preset braking times, comprising:

(a) encoder means coupled to said member for providing an output corresponding to the absolute position of said member;

(b) a generator for producing clock pulses;

(c) a digital counter connected to said generator and enabled to accumulate clock pulses in response to said initiating means;

(d) preset means responsive to said encoder output and said initiating means for establishing at least a first and second mutually independent preset braking times, and for selection of a first preset braking time when said member is moving in an upstroke direction and for selection of a second preset braking time when said member is moving in a downstroke direction;

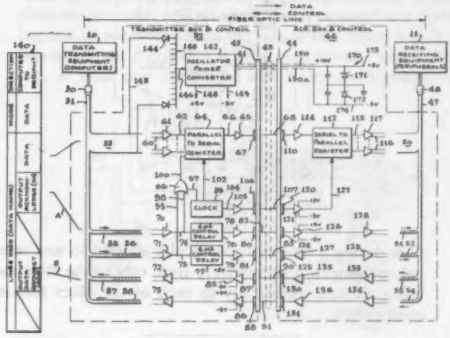
(e) memory means connected to said counter and responsive to changes in said encoder output for accepting the accumulated contents of said counter;

(f) comparator means connected to said preset means and to said memory means for producing an alert condition when the contents of said memory means exceeds said selected preset braking time.

4,161,650
SELF-POWERED FIBER OPTIC INTERCONNECT SYSTEM

Kenneth O. Caouette, Valencia; George H. Fortescue, Granada Hills; Mohammad K. Zaman, Northridge, and Donald J. Oda, Palmdale, all of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Apr. 6, 1978, Ser. No. 894,161
Int. Cl.[2] H04B *9/00*; H02M *3/24*; G02B *5/14*
U.S. Cl. 250—199 **8 Claims**



1. A self-powered fiber optic interconnect system for interconnecting a data transmitting device and a data receiving device comprising;

means included in said data transmitting device for producing an electrical data signal;

a transmitter converter comprising means for receiving and converting said electrical data signal to an optical data signal;

a fiber optic line for receiving said optical signal at one end thereof for transmission therethrough;

a receiver unit at the other end of said fiber optic line comprising means for receiving and reconverting said optical signal to an output electrical data signal; and,

means for producing power from said electrical data signal in said data transmitter device for operating said transmitter converter and said receiver unit.

4,161,651
SIMULTANEOUSLY SAMPLED REMOTE DATA READING AND TRANSMISSION SYSTEM USING OPTICAL FIBERS

Yoshihiro Sano; Tomio Chiba, both of Katsuta; Hiroyuki Kudou, and Yoshiteru Miki, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 2, 1978, Ser. No. 882,909
Claims priority, application Japan, Mar. 16, 1977, 52-27907
Int. Cl.[2] H04B *9/00*; G01R *19/26*
U.S. Cl. 250—199 **8 Claims**

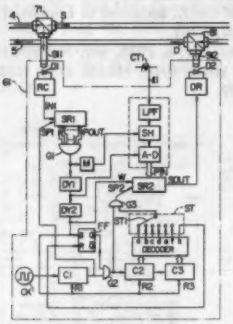
1. A system for reading and transmitting data from a plurality of remote terminal equipments installed at respective measuring locations distributed in a system to be controlled in protection and control operations through simultaneous sampling, comprising at least one optical fiber, means for generating a synchronizing signal to be transmitted through said optical fiber to each of said terminal equipments and means for receiving data at said measuring locations from each of said terminal equipments through said optical fiber, wherein each of said terminal equipments comprises:

first means for receiving said synchronizing signal to initiate measurement of a quantity to be measured at the associated measuring location in synchronism with said synchronizing signal;

second means for sampling the measured quantity and con-

verting an analog data corresponding to the sampled quantity into corresponding digital data; and

third means for sending out said digital data output from said second means to said receiving means through said optical



fiber during a time slot specifically allotted to said terminal equipment, discriminately from other time slots each being allotted specifically to each of the other terminal equipments.

4,161,652

SYSTEM FOR OPTICALLY AIMING A LASER BEAM ON TO A TARGET

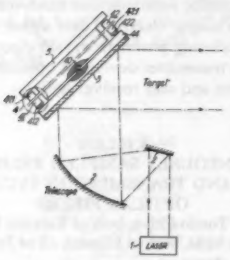
Bernard G. A. Moreau, Bagneux, and René J. J. Jalin, Chatillon, both of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, Chatillon, France

Filed Dec. 22, 1977, Ser. No. 863,234

Claims priority, application France, Dec. 24, 1976, 76 39052; Dec. 15, 1977, 77 37912

Int. Cl.[2] G01B *11/26*; G01J *1/20*

U.S. Cl. 250—203 R **6 Claims**



2. A system for optically aiming a laser beam on to a target comprising:

a mirror which reflects the laser beam towards the target;

a pivot for said mirror;

first and second vibrating control members for determining with the pivot a first mirror rotation axis and a second mirror rotation axis perpendicular to the first axis and controlling the angular position of the mirror around said axes;

means for generating a first reference signal having a first predetermined frequency;

means for generating a second reference signal having a second predetermined frequency, different from said first frequency;

a laser radiation detector receiving the laser radiation reflected by the target and producing a reception signal;

two pass band filters respectively tuned to said first and second frequency and both filtering said reception signal for respectively delivering a first and a second re-aiming signal components; and

means for operating said first and second vibrating control members by respectively the sum of the first reference signal and the first re-aiming signal component and the sum of the second reference signal and the second re-aiming signal component.

4,161,653

CONTROL CIRCUIT FOR REAR VIEW MIRRORS PROVIDED WITH A LIQUID CRYSTAL CELL

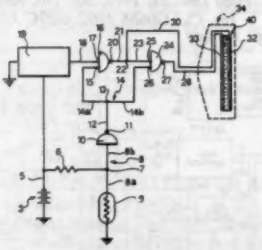
Remo Bedini, Pisa, and Danilo De Rossi, S. Giuliano Terme, both of Italy, assignors to FIAT Societa per Azioni, Turin, Italy

Filed Feb. 24, 1978, Ser. No. 880,743

Claims priority, application Italy, Feb. 25, 1977, 45207 A/77

Int. Cl.[2] H01J *39/12*

U.S. Cl. 250—215 **1 Claim**



1. Control circuit for controlling the potential difference applied to conductive layers of a liquid crystal cell forming part of a rear view mirror for motor vehicles, said circuit being adapted to be supplied from a direct current low voltage source, and comprising, in combination:

resistive potential divider means, connectible to said source and including a resistance and a photoresistor;

a logic invertor, connected in parallel with the photoresistor, to invert the voltage across the photoresistor;

oscillator means connectible to said source for generating a square wave;

a first logic NAND gate having a first input connected to the oscillator, a second input connected to the output of the logic invertor and an output;

a second logic NAND gate, having a first input connected to the output of the first NAND gate, a second input connected to the output of the logic invertor and an output;

conductor means connecting the output of the second logic NAND gate to one of the conductive layers of the liquid crystal cell; and

further conductor means connecting the output of said first logic NAND gate to the other conductive layer of the liquid crystal cell,

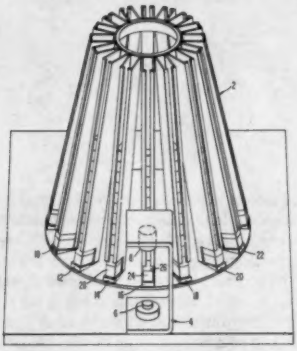
whereby, when the photoresistor is activated, in use of the circuit, by incident light in excess of a predetermined threshold intensity, the voltage between the conductive layers of the liquid crystal cell has a peak-to-peak amplitude double the amplitude of the square wave generated by the oscillator means.

4,161,654

CAROUSEL-TYPE COMPONENT DISPENSER WITH PHOTOELECTRIC CONTROL MEANS

Thomas D. Szarewicz, East Lansdowne, and John H. Drinkard, Jr., Exton, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 20, 1977, Ser. No. 862,659
Int. Cl.[2] G01D *21/04*
U.S. Cl. 250—221 7 Claims



1. An apparatus for dispensing components in the order required for the assembly of a work piece, comprising:

a rotatable carousel for storing sequentially prearranged components;

means for indexing said carousel to the next desired position of rotation, said position corresponding to the location on said carousel of the next component required for the assembly of said work piece;

means for rotating said carousel to the position specified by said indexing means;

means for providing a detectable energy beam;

means for detecting the presence of said energy beam, said detecting means switching from a first state to a second state in response to the non-detection of said energy beam;

a source of electrical power;

means responsive to the application of said source of electrical power for activating said indexing means, said activation means further responsive to the removal of said source of electrical power for activating said rotating means; and

means connected to said detecting means, said source of electrical power and said activation means, for applying said source of electrical power to said activation means when said detecting means is in the second state and for removing said source of electrical power to said activation means when said detecting means is in the first state.

4,161,655

MULTI-CELL DETECTOR USING PRINTED CIRCUIT BOARD

Dennis J. Cotic; David M. Hoffman, both of Milwaukee; Peter S. Shelley, Brookfield, and Laurel J. Zech, Milwaukee, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 28, 1977, Ser. No. 855,532
Int. Cl.[2] G01T *1/18*
U.S. Cl. 250—385 8 Claims

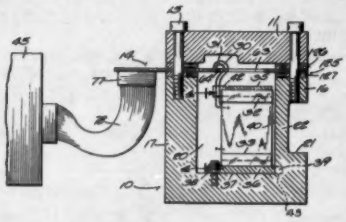
1. A radiation detector comprising a housing for being occupied by ionizable gas at a pressure of several atmospheres and having a closed bottom, wall means defining a chamber having a top opening, and a radiation transmissive window in said housing,

an array of detector elements disposed in said chamber and a fine signal wire extending from a plurality of the elements, respectively, said wires being arranged for being accessible through said top opening,

a cover for being disposed on said wall means to close said opening and means for pressing said cover toward said wall means with sufficient force to maintain said gas pressure,

improved means for establishing electric circuits between the outside of said chamber and said wires inside of said chamber, comprising:

a circuit board including an insulating base layer having an opening for being disposed over the top opening of said chamber to enable said wires to extend through said opening and be accessible from the side of said board which is opposite from a side that is presented toward said chamber, at least one margin of said board surrounding its



opening extending over the opening in said chamber and areas of said board around said opening being superimposed over the top of said wall means,

a first plurality of conductive strips adhered to said base layer, said strips having corresponding ends terminating outside of said chamber and opposite corresponding ends terminating inside said chamber on said one margin of the opening and having holes and aligned holes in said board for said wires to pass through said board from said chamber to make electric contact with said strips,

an insulating layer superimposed over said strips and adhered to said board, and

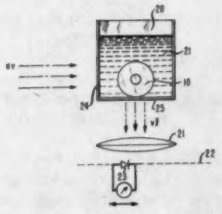
gasket means disposed between said board and wall means and between said board and cover to effectively seal said chamber when said cover is pressed toward said wall means.

4,161,656

METHODS FOR MEASURING DOPANT CONCENTRATIONS IN OPTICAL FIBERS AND PREFORMS

Dietrich Marcuse, Lincroft, and Herman M. Presby, Highland Park, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 28, 1978, Ser. No. 890,869
Int. Cl.[2] G01T *1/10;* G01N *21/38*
U.S. Cl. 250—459 5 Claims



1. A method of determining the dopant concentrations in optical fibers and fiber preforms CHARACTERIZED BY THE STEPS OF:

illuminating a length of a fiber/preform with a source of ultraviolet radiation;

determining, along a direction transverse to the longitudinal axis of said fiber/preform, the intensity distribution of radiant energy derived from said fiber/preform; and

determining from said intensity distribution, the concentration of dopant as a function of distance from the center of the fiber/preform.

2. The method according to claim 1 CHARACTERIZED IN THAT:

the radiant energy measured is the fluorescent light produced by the dopant whose concentration is to be determined.

4,161,657

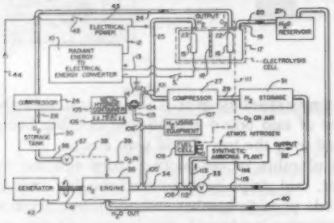
HYDROGEN SUPPLY AND UTILITY SYSTEMS AND COMPONENTS THEREOF

Marlin R. Shaffer, Jr., 1957 Hubbard Ave., Salt Lake City, Utah 84108

Continuation of Ser. No. 551,763, Feb. 21, 1975, abandoned. This application Mar. 13, 1978, Ser. No. 885,584

Int. Cl.[2] F03G *7/02*

U.S. Cl. 290—1 R **5 Claims**



1. An electrical power system including, in combination: first structural means directly responsive to inpingement thereon of the sun's rays for converting the sun's radiant energy in said rays as so received into electrical energy, said first means including a pair of opposite-polarity, electolysis, electrical connectors; second electrolysis means having water incorporating a salt-type electrolyte for generating hydrogen at a lower pressure and also oxygen, said second means having a pair of separated electrodes respectively coupled to said electrical connectors, a water inlet, and hydrogen and oxygen gas outlet ports respectively disposed cooperably with said electrodes; third means coupled to said hydrogen port and utilizing the hydrogen therefrom for producing a useful result; hydrogen storage means, including an electrically operated compressor, interposed between said second and third means, for storing hydrogen at a higher pressure, said hydrogen storage means being provided with means for regulating hydrogen flow from said hydrogen storage means to said third means for essentially uniform flow.

4,161,658

WIND TURBINE GENERATOR HAVING INTEGRATOR TRACKING

John P. Patrick, South Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 15, 1978, Ser. No. 916,320

Int. Cl.[2] F03D *9/00*

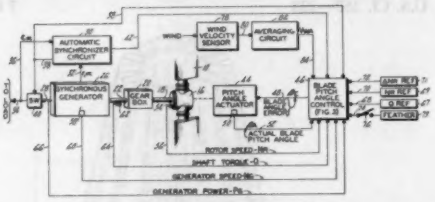
U.S. Cl. 290—44 **2 Claims**

1. In a power generating system including a wind turbine driven generator, said wind turbine having a wind driven rotor with a plurality of variable pitch angle blades:

first control means responsive to a first condition of operation of said system for producing as a function thereof a first blade angle reference signal indicative of a desired blade pitch angle,

second control means responsive to a second condition of operation of said system for producing as a function thereof a second blade angle reference signal indicative of a desired blade pitch angle, said second control means including integrator means producing an integral blade angle control signal,

means for selecting one of said first and second blade angle reference signals,



actuator means responsive to the selected one of said first and second blade angle reference signals for varying the pitch angle of said blades in response thereto,

and feedback means responsive to the selected one of said first and second blade angle reference signals for maintaining the integral blade angle control signal produced by said integrator means at a value within a preselected range relative to said selected one of said blade angle reference signals.

4,161,659

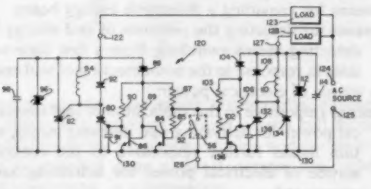
SOLID STATE PROXIMITY SWITCH

Keith Jacob, Ann Arbor, Mich., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Continuation-in-part of Ser. No. 857,584, Dec. 5, 1977. This application Jun. 9, 1978, Ser. No. 914,133

Int. Cl.[2] H01H *35/38;* **G05D** *7/06*

U.S. Cl. 307—39 **9 Claims**



1. A proximity detector and control comprising:

a normally closed terminal, a normally open terminal and a common terminal adapted to be coupled between an AC source and a pair of alternately actuated loads;

a proximity detector providing first and second signals representative of the absence or presence, respectively, of an object to be detected;

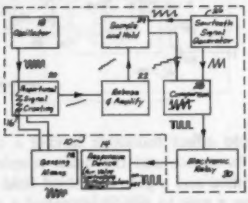
a first solid state switching circuit coupled between said normally closed and said common terminals and having a control terminal coupled to said proximity detector and responsive to said first signal therefrom to provide a conduction path between said normally closed terminal and said common terminal; and

a second solid state switching circuit coupled between said normally open and said common terminals and having a control terminal coupled to said proximity detector and responsive to said second signal therefrom to provide a conduction path between said normally open terminal and said common terminal, wherein said first and second solid state switching circuits each includes a pair of controlled unidirectional conductive devices coupled to conduct current between said normally closed and normally open terminals and said common terminal in opposite directions.

4,161,660
APPARATUS FOR PRODUCING A TIME-PROPORTIONED CONTROL SIGNAL ELECTRONICALLY

Donald A. Gallant, Charlotte, N.C., assignor to Longwood Machine Works, Inc., Woodside, N.Y.

Filed Aug. 31, 1977, Ser. No. 829,487
Int. Cl.[2] H01H *35/42*
U.S. Cl. 307—118 **23 Claims**



1. An apparatus for producing a timed control signal for actuation of a responsive device for changing a condition to a predetermined desired condition, said apparatus comprising

(a) electronic means for sensing the condition;

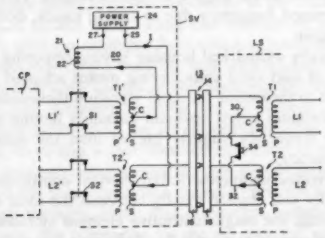
(b) means for creating electronic signals proportional to the measure of said condition being sensed by said electronic means within a sensitivity range and cyclic electronic ramp signals rising uniformly to a maximum amplitude representing said sensitivity range;

(c) electronic means for processing said proportional signals to create therefrom a series of timed control signals by comparison of said proportional signals and said rising cyclic ramp signals at each cycle thereof and creating one of said timed control signals for the remaining duration of each cycle at the time that each ramp signal rises above each proportional signal.

4,161,661
SYSTEM FOR AUTOMATICALLY SWITCHING TRANSFORMER COUPLED LINES

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of William S. Dwinell, Santa Ana, Calif.

Filed Mar. 9, 1978, Ser. No. 885,067
Int. Cl.[2] H01H *3/16*
U.S. Cl. 307—119 **6 Claims**



1. A system for automatically operating switching means in transformer-coupled AC lines interconnected by a two-plug connector, comprising:

four transformers, each transformer having a primary winding and a center-tapped secondary winding;

a switching circuit connected to the center taps of the secondary windings of a first and second transformer,

the secondary windings of the first and second transformers being connected to one plug of the connector,

the secondary windings of the third and fourth transformers being connected to the other plug of the connector;

an electric line connected to each primary winding, a switching means in the lines connected to the first and second transformers,

said switching circuit including a switch controller for operating the switching means;

an impedance connected between the center taps of the secondary windings of the third and fourth transformers,

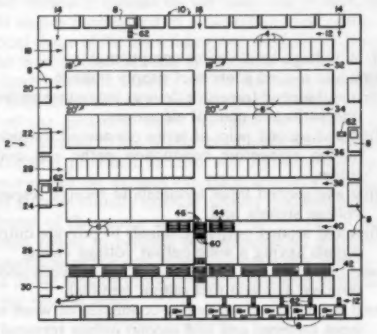
said switching circuit having continuity through said impedance whereby said switch controller maintains said switching means in one state when said connector plugs are mated, and

said switching circuit having discontinuity through said impedance whereby said controller maintains said switching means in another state when said plugs are unmated.

4,161,662
STANDARDIZED DIGITAL LOGIC CHIP

Robert B. Malcolm, Scottsdale, Ariz., and Clarence E. McDaniel, Wichita Falls, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 651,494, Jan. 22, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 849,047
Int. Cl.[2] H01L *27/04*
U.S. Cl. 307—213 **3 Claims**



1. A semiconductor chip including a plurality of logic cell means and a plurality of bonding pad means, comprising in combination:

a plurality of first roadway means for providing space for placeable electrical conductors between at least two of the plurality of logic cell means, each of said plurality of first roadway means having a longer and a shorter dimension;

a plurality of second roadway means for providing space for placeable electrical conductors between at least one of the plurality of logic cell means and at least one of the plurality of bonding pad means, said second roadway means having a longer and a shorter dimension;

first cross-under means for bypassing said placeable electrical conductors, said first cross-under means being disposed adjacent to each of the plurality of logic cell means in said first roadway means, said first cross-under means having a longer dimension and a shorter dimension, said longer dimension of said first cross-under means being parallel to said longer dimension of said first roadway means;

second cross-under means for bypassing said placeable electrical conductors, said second cross-under means being disposed adjacent each of the plurality of bonding pad means in said second roadway means, said second cross-under means having a longer dimension and a shorter dimension, said longer dimension of said second cross-under means being perpendicular to said longer dimension of said second roadway means; and

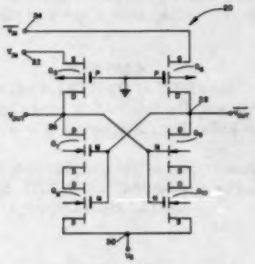
wherein the logic cell means further comprises:
a plurality of logic gates; and
a plurality of flip-flops, said plurality of logic gates being a multiple of said plurality of logic flip-flops, said multiple being in the range of from 2.0 to 2.5.

4,161,663

HIGH VOLTAGE CMOS LEVEL SHIFTER

Miguel A. Martinez, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 10, 1978, Ser. No. 885,248
Int. Cl.[2] H03K *5/02, 3/353, 17/10, 17/60*
U.S. Cl. 307—264 **5 Claims**



1. A voltage level shifter comprising:
first and second sources of supply voltage,
first and second transistor devices having respective conduction paths and control electrodes,
first and second pairs of series connected transistor devices having respective conduction paths and control electrodes,
first and second input terminals to receive respective input voltage signals, and
first and second output terminals to provide output voltage signals having a wide output voltage swing,
said first transistor device connected between said first input terminal and said first output terminal,
said second transistor device connected between said second input terminal and said second output terminal,
the respective control electrodes of said first and second transistor devices connected together and to said first source of supply voltage,
said first pair of series connected transistor devices connected between said first output terminal and said second source of supply voltage,
said second pair of series connected transistor devices connected between said second output terminal and said second source of supply voltage,
the respective control electrodes of each of the first pair of transistor devices connected together and to said second output terminal,
the respective control electrodes of each of the second pair of transistor devices connected together and to said first output terminal.

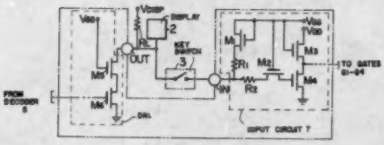
4,161,664

INPUT CIRCUIT

Hiroto Kawagoe, Kodaira, and Kosei Nomiya, Tokyo, both of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 643,771, Dec. 23, 1975, abandoned.
This application Feb. 21, 1978, Ser. No. 879,756
Claims priority, application Japan, Jan. 6, 1975, 50/000103
Int. Cl.[2] H03K *3/353, 17/08*
U.S. Cl. 307—304 **6 Claims**

1. In an input circuit for a MISFET integrated circuit, including at least an input terminal to which an input signal is applied, said input circuit comprising:
a first field effect transistor having a conduction path between its source and drain coupled between said input terminal and a power supply terminal to which a voltage lower in absolute value than a high voltage potential of said input signal is applied, and having a gate to which is applied a voltage causing said first field effect transistor to cut off when said input signal is at said high voltage potential; and



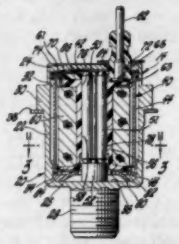
a second field effect transistor having a conduction path between its source and the drain coupled between said input terminal and a gate of a third field effect transistor and having a gate to which is applied a voltage lower in absolute value than said high voltage potential, to prevent said high voltage potential from being applied to the gate of said third field effect transistor.

4,161,665

MAGNETOSTRICTIVE ENGINE DETONATION SENSOR

Charles E. Buck; James M. Johnson, and Paul A. Joseph, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1977, Ser. No. 864,209
Int. Cl.[2] H01L *41/06*
U.S. Cl. 310—26 **3 Claims**



1. A vibration sensor adapted for use with a spark ignited internal combustion engine to detect ringing vibrations of a predetermined frequency due to engine knock, comprising, in combination:
a generally cylindrical housing having opposing axial ends, one of said axial ends having means adapted for attachment to the engine for axial vibration therewith, the housing forming a first resonant assembly having a first resonant frequency slightly higher than the predetermined frequency;
an elongated magnetostrictive element compressed longitudinally and aligned axially between the axial ends of the housing, the magnetostrictive element including a source of permanent magnetic flux defining a flux path in longitudinal orientation therethrough and characterized by a reluctance which varies in response to vibration induced variations in magnetostrictive element compression;
a pickup assembly comprising a spool and a pickup coil wound on the spool, the spool having a surface defining an axial opening therethrough and being disposed in the housing with the magnetostrictive element extending through the axial opening, whereby the pickup coil is adapted to sense the vibration-induced reluctance changes in the magnetostrictive element and generate an output

electrical signal, the spool further engaging the magnetostrictive element along said surface in a force fit characterized by at least a predetermined push-out force, the pickup assembly thereby being physically coupled to the magnetostrictive element to form a second resonant assembly having a second resonant frequency slightly lower than the predetermined frequency, the first and second resonant assemblies, in combination, being effective to establish a single resonant peak at substantially the predetermined frequency in the sensor electrical output signal characteristic.

4,161,666

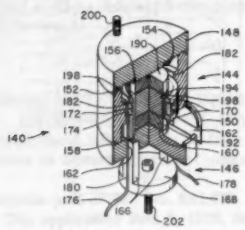
IMBALANCE DETERMINING APPARATUS

Thomas J. Bacsanyi, Novi, and Edward J. Harmon, Wixom, both of Mich., assignors to Ransburg Corporation, Indianapolis, Ind.

Division of Ser. No. 733,433, Oct. 18, 1976, Pat. No. 4,060,003. This application Jun. 6, 1977, Ser. No. 803,463

Int. Cl.[2] H02K *33/18*

U.S. Cl. 310—27 **5 Claims**



1. A force coil comprising a housing, first and second magnets for generating a magnetic field within the housing, the housing including an inner wall defining the interior thereof and means for providing return paths for the magnetic flux, at least one turn of an electrical conductor for conducting current, the first and second magnets being aligned generally axially of one another, one pair of like poles of the first and second magnets being directed oppositely in the housing and the other pair of like poles facing one another to provide a substantially uniform magnetic field which extends radially of the alignment axis of the magnets and which extends to the return path providing means of the housing, and means for conducting flux disposed between and in contact with the facing poles of the magnets, the return path providing means of the housing including a flux conducting region of the inner wall which projects radially inwardly into closely spaced apart relation with the flux conducting means to provide an air gap therebetween through which flux is directed radially, means for supporting the conductor in the air gap for movement therein in response to force due to current flow in the conductor, the housing inner wall comprising a generally cylindrical portion disposed about an axis, the flux conducting means comprising a generally cylindrical spacer which is generally coaxial with the housing inner wall, the spacer including an end wall in contact with each of the facing like poles of the first and second magnets, the spacer end walls and facing like poles being generally equal in size and shape, the flux conducting region of the inner wall comprising an axially and radially inwardly extending annular portion of the inner wall.

4,161,667

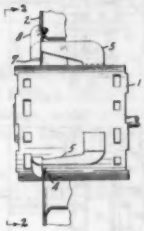
FLEXIBLE MOUNTING OF ELECTRIC MOTORS

John B. Buckman, and Robert E. Lykes, both of Troy, Ohio, assignors to A. O. Smith Corporation, Milwaukee, Wis.

Filed Nov. 16, 1977, Ser. No. 851,962

Int. Cl.[2] H02K *5/24*

U.S. Cl. 310—51 **3 Claims**



1. A flexible mounting for an electric motor for securing the generally cylindrical main frame of the motor to a supporting means and dampen the torsional forces of the motor by a compact construction, which comprises a plurality of circumferentially spaced brackets each having an arm extending in an arcuate path along the length of the main frame of the motor, an inner pad integrally formed on the inner end of each arm and at right angles thereto and of a curvature conforming to the cylindrical shape of the main frame and welded to the main frame of the motor, the outer end of each arm terminates in a generally short extension radially of the arcuately extending portion of each arm, an outer pad integrally formed on the outer end of the generally short extension of the arm and disposed to be secured to the supporting means, and a reverse bend construction provided in each arm between the short radial extension and the arcuate extension whereby the short extension of the arm initially extends radially inwardly toward the main frame of the motor and then turns outwardly on a predetermined radius to provide said terminating portion of the short extension of the arm extending generally parallel to that portion of the radially inwardly short extension of the arm leading to the reverse bend.

4,161,668

EXCITER COOLING ARRANGEMENT FOR DYNAMOELECTRIC MACHINES

James S. Schmohe, and Ronald C. Van Kessel, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 635,499, Nov. 26, 1975, abandoned. This application Jul. 5, 1977, Ser. No. 813,016

Int. Cl.[2] H02K *11/00*

U.S. Cl. 310—68 D **4 Claims**

1. A rectifier support structure for dynamoelectric machines having rectifiers secured to a rotating shaft within a housing wherein an oil coolant is sprayed from a source at one end of the housing directly on the rectifiers, comprising:

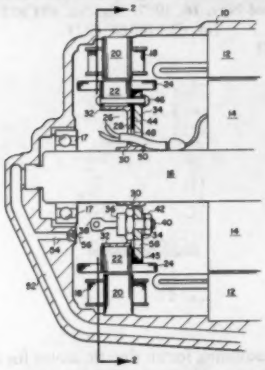
a hub structure including at least one support member secured to and rotatable with the shaft and a circular rim member secured to said support member and concentric with the shaft;

at least one plate secured to said hub structure wherein the plane of said plate is perpendicular to the axis of the shaft and configured with apertures suitable to receive the rectifiers;

insulating means interposed between said hub structure and said plate for electrically insulating said plate from said hub; and

a plurality of coolant apertures configured in said plate effective to permit at least a portion of the coolant to flow in a direction parallel to the axis of the shaft through said plates wherein each of said coolant apertures is located in axial alignment with the circular rim member and with a

portion of the aperture disposed radially inwardly relative to the circular rim member and a portion of the aperture disposed radially further away from the center line of the



rotating shaft than said circular rim member thereby being effective to reduce sludge build-up on said circular member.

4,161,669

INSULATING ASSEMBLY FOR STATOR SLOTS OF ELECTRICAL MOTORS

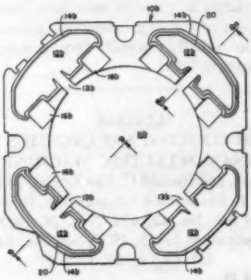
Michele Aimar, Turin, Italy, assignor to ITW Fastex Italia, Turin, Italy

Filed Jun. 10, 1977, Ser. No. 805,253

Claims priority, application Italy, Jun. 16, 1976, 24359 A/76; Aug. 24, 1976, 26483 A/76

Int. Cl.[2] H02K *3/00*

U.S. Cl. 310—194 **6 Claims**



1. An insulating assembly for use with a slotted stator in an electrical motor, including a pair of identical end plates of insulating material each having a center opening for receiving a rotor of said motor and a plurality of cutouts symmetrically spaced around said opening and having a complimentary shape to the said stator slots of said electrical motor, each of said cutouts having along the periphery thereof a flange extending from said end plate, one half the total number of said flanges of each end plate of said pair being provided at the free ends thereof with an extended stepped-down edge complimentary to and acceptable within the corresponding other half of the flanges of the other plate of said pair, one of said pair of end plates adapted to be positioned on each end of said stator with corresponding mating flanges inserted in one of said stator slots so as to form an insulating interlocked partition between the inner wall of said slots and a stator winding extending between adjacent slots, as well as substantially insulating the opposite end surfaces of said stator.

4,161,670

CIRCUIT ARRANGEMENT FOR DRIVING PIEZOELECTRIC INK JET PRINTERS

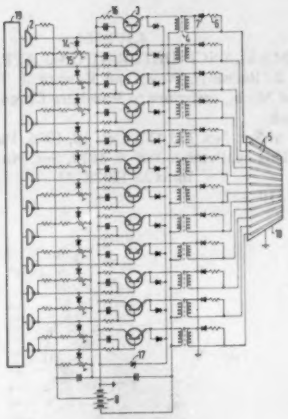
Hans Kern, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 10, 1976, Ser. No. 721,951

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1975, 2548691

Int. Cl.[2] H01L *41/10*

U.S. Cl. 310—317 **13 Claims**

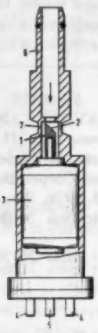


1. In a circuit arrangement for driving at least one printing jet in mosaic printers, in the form of a tubular drive element of polarized ceramic, which contains printing liquid and whose diameter reduces with the application of a voltage in the direction of the polarizing voltage and increases with the application of a voltage in opposition to the polarizing voltage, the combination of means operatively connected to said ceramic for supplying thereto a voltage pulse comprising two directly following half cycles of opposite polarity, the second half cycle of which is of a polarity to polarize said ceramic and the first half cycle of which is of opposite polarity, and means, responsive upon selection of such printing jet, to trigger said pulse-supplying means, whereby the first half cycle of the supplied pulse is operable to initially effect expansion of said drive element from its normal rest condition, for effecting an ink flow into said drive element to fill the latter in its expanded state, and the second half of the supplied pulse is operable to effect an immediately following contraction of said drive element beyond its normal rest condition to apply pressure upon the ink in the expanded drive element, which pressure is reactive on the incoming ink flow produced by the initial expansion of the drive element, with the effective working stroke being derived from both half cycles and thus comprising the difference between such expanded and contracted conditions.

4,161,671
X-RAY TUBE

Gerardus F. Klinkert, Waddinxveen, Netherlands, assignor to B.V. Neratoom, The Hague, Netherlands

Filed Mar. 14, 1978, Ser. No. 886,444
Claims priority, application Netherlands, Mar. 14, 1977, 7702720
Int. Cl.[2] H01J *35/10*
U.S. Cl. 313—60 1 Claim

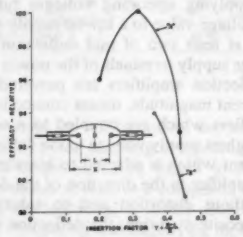


1. An X-ray tube comprising a cathode serving as a source of electron rays and a rotatable anode, characterized in that the anode is bevelled so that a rotating X-ray beam can be obtained by rotation of the anode.

4,161,672
HIGH PRESSURE METAL VAPOR DISCHARGE LAMPS OF IMPROVED EFFICACY

Daniel M. Cap, Kirtland, and William H. Lake, Novelty, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 812,479, Jul. 5, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,628
Int. Cl.[2] H01J *61/30*
U.S. Cl. 313—220 6 Claims

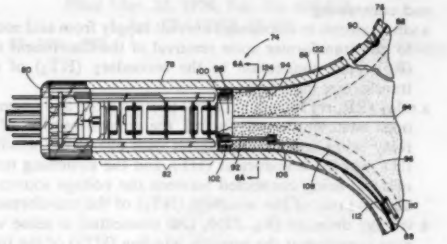


1. A high pressure metal vapor arc discharge lamp for general illuminating purposes and rated for a power input of not more than 250 watts, said lamp comprising an arc chamber having a shape selected from the group of shapes consisting essentially of ellipsoids and spheroids and approximations thereof, said arc chamber being defined within an envelope made of light-transmitting material and having a wall thickness not exceeding 1.5 millimeters, a fill of mercury and metal halide contained within said chamber and adapted to be vaporized during operation of the lamp, said arc chamber having a wall area of such value as to effect a wall loading in the range of from about 10 to 35 watts/cm^2 when the lamp is operated at rated wattage, said arc chamber having a length-to-diameter ratio (X/D) in the range of from about 0.9 to 2.5, a pair of electrodes supported within said arc chamber on inleads extending through said envelope, said electrodes having opposing tips spaced from one another by a distance L of such value as to effect an arc loading in the range of from about 60 to 150 watts/cm when the lamp is operated at rated wattage, the insertion factor Y of said electrodes being in the range of from about 0.1 to 0.6, where Y is equal to the quantity (X−L)/X, and neck seals hermetically bonding said inleads to said envelope, said neck seals and any heat-conserving devices associated therewith collectively subtending less than 10 percent of the solid angle at the center of said arc chamber.

4,161,673
ARC SUPPRESSION AND STATIC ELIMINATION SYSTEM FOR A TELEVISION CRT

Robert M. Gregg, Chicago, and Philip C. Miller, Northbrook, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Jun. 30, 1977, Ser. No. 811,494
Int. Cl.[2] H01J *29/02, 29/84*
U.S. Cl. 313—481 9 Claims

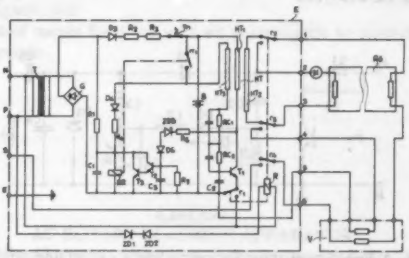


1. An electron gun for generating at least one electron beam, said gun being characterized by having an elongated discrete arc suppression resistor having length-to-width ratio is about 8:1 to 20:1 mounted on an anode electrode of the gun in cantilever fashion at a point spaced from said beam so as not to interfere therewith, said resistor extending substantially axially and supporting on the distal end a getter strap to which it is electrically connected, said getter strap in turn supporting a getter pan assembly containing a vaporizable getter material.

4,161,674
OVERVOLTAGE PROTECTED FLUORESCENT TUBE SUPPLY CIRCUIT

Paul Maurer, CH-8902 Urdorf, Switzerland

Filed Jan. 27, 1978, Ser. No. 872,920
Claims priority, application Switzerland, Feb. 3, 1977, 1224/77
Int. Cl.[2] H05B *37/00, 41/14*
U.S. Cl. 315—86 9 Claims



1. Overvoltage protected fluorescent tube supply circuit to supply a fluorescent tube (Ro) from a d-c voltage source (B) and to protect the circuit upon removal of the fluorescent tube having

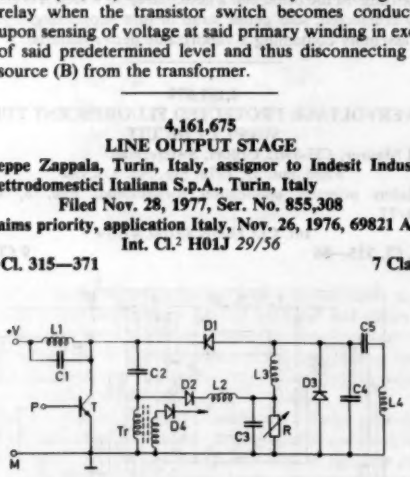
a transformer (HT) having a secondary (HT_2) connected to the electrodes of the fluorescent tube (Ro);
a primary winding (HT_1) and a feedback winding (HT_3);
an oscillatory supply circuit for the transformer including
a controlled semiconductor switching element (T_1) having a control electrode (base) and a main current carrying path (emitter-collector), said main current carrying path being connected serially between the primary winding (HT_1) and said voltage source (B);
and a timing circuit (RC_1 RC_2) connected to the feedback winding, to said source, and to the control electrode of said controlled switching element (T_1) to control, respectively, conduction, and non-conduction, in periodic oscillatory cycles, of said semiconductor switching element in accordance with induction of voltage in said feedback winding upon change of current flow through the primary winding due to change of said semiconductor switching element between conductive and nonconductive state, change of current flow through said primary winding inducing a high voltage in the secondary (HT_2) thereof to operate the fluorescent tube,
and comprising
a safety circuit to disconnect current supply from said source to said transformer upon removal of the fluorescent tube (Ro) from connection to the secondary (HT_2) of said transformer including
a relay (RR, rr) having a control portion (RR) and normally open switching terminals (rr), the control portion of the relay being connected in series with one of the windings (HT_3) of the transformer (HT), and the switching terminals (rr) being connected between the voltage source (B) and said one of the windings (HT_3) of the transformer;
a voltage detector (R_6, ZD5, D6) connected to sense voltages occuring at the primary winding (HT_1) of the transformer upon disconnection of the tube (Ro) from the secondary (HT_2);
and controlled switching means (T_2, T_3) connected to and controlled by the voltage detector responsive to a sensed voltage at said primary winding in excess of a predetermined level to remove supply of power from said source (B) to said transformer (HT) comprising a transistor switch (T2, T3) connected to the relay to deenergize the relay when the transistor switch becomes conductive upon sensing of voltage at said primary winding in excess of said predetermined level and thus disconnecting the source (B) from the transformer.

4,161,675

LINE OUTPUT STAGE

Giuseppe Zappala, Turin, Italy, assignor to Indesit Industria Elettrodomestici Italiana S.p.A., Turin, Italy

Filed Nov. 28, 1977, Ser. No. 855,308
Claims priority, application Italy, Nov. 26, 1976, 69821 A/76
Int. Cl.[2] H01J *29/56*
U.S. Cl. 315—371 **7 Claims**



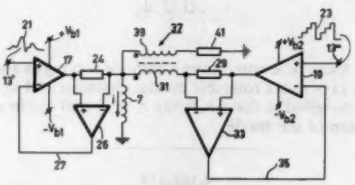
1. A line output stage for providing a cyclic line saw tooth signal comprising a first parallel resonant circuit including a horizontal deflection coil and a first capacitor, one side of the first parallel resonant circuit being connected to ground and the other side of the first parallel resonant circuit being returned to ground by way of a first diode and a controllable semiconductor switch which controls the cycle of said cyclic line saw tooth signal; a second diode connector in parallel with the first parallel resonant circuit, a second parallel resonant circuit comprising a second capacitor and a second coil having one side for connection to a D.C. power supply and the other side returned to ground by way of the controllable semi-conductor switch; and an energy transfer circuit coupled to the second parallel resonant circuit for transferring energy during each saw tooth cycle from the second parallel resonant circuit to the first parallel resonant circuit, the energy transfer circuit including a third diode and means for modulating at vertical frequency the power transferred which is capable of adjusting said power transferred during each horizontal saw tooth cycle.

4,161,676

DEVICE FOR DISPLAYING VARIABLE QUANTITIES

Slobodan Alisic, Eindhoven; René H. Hamer, Rotterdam, and Ludovicus A. H. Fleskens, St. Oedenrode, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 5, 1978, Ser. No. 867,162
Claims priority, application Netherlands, Jan. 17, 1977, 7700418
Int. Cl.[2] H01J *29/70, 29/72*
U.S. Cl. 315—395 **5 Claims**



1. A device for displaying variable quantities on a display screen of a cathode ray tube comprising, a deflection unit including deflection coils for deflecting an electron beam produced in the cathode ray tube and at least two deflection amplifiers, at least one deflection amplifier having an input adapted to receive a signal voltage which corresponds to the quantity to be displayed and an output connected to a set of deflection coils, power supply means including a plurality of terminals for supplying operating voltages ranging from a highest supply voltage value to a lowest supply voltage value, means coupling at least two of said deflection amplifiers to respective voltage supply terminals of the power supply means so that said deflection amplifiers are powered with supply voltages of different magnitude, means connecting each of the deflection amplifiers which are coupled to a supply voltage other than the highest supply voltage to the deflection coils via a coupling element which is adapted to transfer signals from the deflection amplifier in the direction of the deflection coils substantially without distortion and to substantially block signals in the opposite direction, the deflection amplifier with the highest supply voltage being adapted to amplify signal components with the highest frequencies and the deflection amplifier with the lowest supply voltage being adapted to amplify signal components with the lowest frequencies.

4,161,677

MATERIAL FLOW STOPPAGE DETECTOR DEVICE

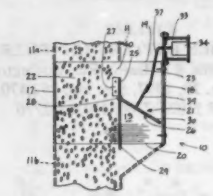
Terry A. Dill, Keota, Iowa, assignor to The Jefferson Industries Company, Fairfield, Iowa

Filed May 12, 1978, Ser. No. 905,275
Int. Cl.[2] G05D *7/00*
U.S. Cl. 318—482 **10 Claims**

1. A flow stoppage detector device for a particulate material supply line comprising:
(a) a housing having:
(1) first and second adjacent upright conduit sections,
(2) a pivoted partition means in said housing comprising a

first leg member movable to a first position to form a common side wall for said conduit sections and a second leg member arranged in a position to obstruct flow of material in one of said conduit sections when the first leg member is in the first moved position therefor, and

(b) switch means on said housing having a switch actuator movable to a first position and a second position, said



actuator, in one of the positions therefor, being adjacent the second leg member in the obstructing position therefor,

(c) said particulate material, when the flow thereof through said first conduit section is obstructed, overflowing said common side wall into said second conduit section, to move said switch actuator from one position to the other position therefor.

4,161,678

SERVO-SYSTEM

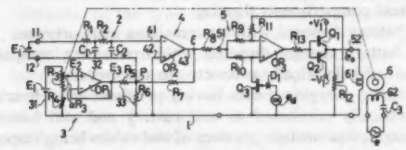
Nobuo Kaieda; Kenji Kawakami; Yoshihiro Okano, and Hiroshi Ohtsu, all of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Nov. 4, 1976, Ser. No. 738,736

Claims priority, application Japan, Nov. 13, 1975, 50-154456[U]; Nov. 13, 1975, 50-154458[U]; Nov. 13, 1975, 50-154459[U]

Int. Cl.² G05D *23/00*

U.S. Cl. 318—641 **7 Claims**



1. A servo-system for self-balancing use using an ac servomotor with no capacitor coupling comprising:

input circuit means including means to receive an input signal and means to receive a compared signal, said input circuit means including a direct-coupled dc amplifier capable of comparing and amplifying input and compared signals and further including feed-back signal adjustment means;

a servo amplifier having a differential direct-coupling amplifier with an inverting input terminal and a noninverting input terminal, said two input terminals being supplied with the output of said input circuit means through individual resistors, and a switch connected between said noninverting input terminal and a common line, said switch being turned on and off in synchronism with an ac power supply;

amplifier means comprising a pair of complementary transistor connected in series with their emitters in common and their bases driven by the output of said servo amplifier;

a resistive dividing feedback circuit coupling the common connection of said transistor emitters directly to said inverting input terminal of said servo amplifier, said feedback circuit serving to make the potential at the inverting input terminal become equal to that at the non-inverting input terminal;

an ac servo motor supplied by said ac power supply, said servomotor being driven by the output of said amplifier means; and

means for causing said ac servo motor to control said feedback signal adjustment means to bring the compared value into balance with said input signal.

4,161,679

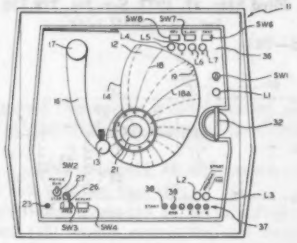
CAM PROGRAM CONTROLLER SYSTEMS

Mitchell I. Kohn, Skokie, and Abdor H. Alton, Lake Zurich, both of Ill., assignors to Love Controls Corporation, Chicago, Ill.

Filed Mar. 24, 1976, Ser. No. 669,815

Int. Cl.² G05B *19/40*

U.S. Cl. 318—685 **36 Claims**



1. An improved cam program controller system for controlling processes by providing set point signals representing time function relationships,

said system including a cam having a contour representing a program of set point signals,

stepping motor means for rotating said cam independently of line frequency,

cam angular position indicating means independent of the cam contour, whereby the time position of the cam program is indicated,

cam follower means juxtaposed to said cam contour for moving responsive to variations in the distance of the contour of the cam,

means responsive to the movement of said cam follower means as said cam rotates for providing said set point signals, and

control means for using said set point signals to control a process.

4,161,680

AC ROTARY MACHINE APPARATUS

Masahiko Akamatsu, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 1, 1977, Ser. No. 847,436

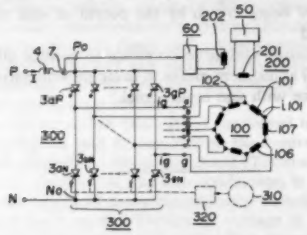
Claims priority, application Japan, Nov. 2, 1976, 51-131906

Int. Cl.² H02P *5/40*

U.S. Cl. 318—722 **20 Claims**

1. In an AC rotary machine apparatus comprising an AC

rotary machine having AC windings and an AC feeder having solid state switches which feeds AC power to the AC windings, an improvement which comprises the AC windings forming seven phases.

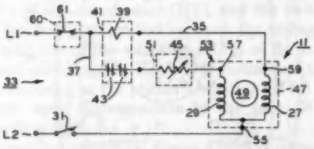


4,161,681

PRIME MOVER, METHOD OF OPERATING SUCH AND CIRCUIT

William C. Rathje, Clinton, Iowa, assignor to General Electric Company, Fort Wayne, Ind.

Filed Mar. 17, 1977, Ser. No. 778,335
Int. Cl.[2] H02P *1/44*
U.S. Cl. 318—783 **46 Claims**



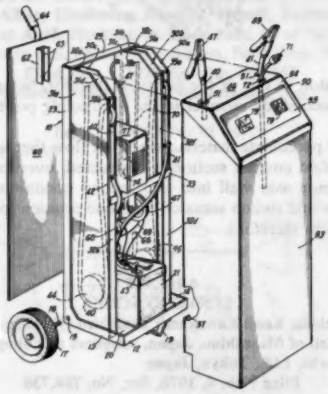
1. In a prime mover adapted for energization across a power source and having a stationary assembly, the stationary assembly including main winding means adapted for excitation upon the energization of the prime mover, auxiliary winding means arranged in parallel circuit relation with the main winding means and adapted for excitation upon the energization of the prime mover, and one of a pair of opposite terminal end portions of each of the main winding means and the auxiliary winding means being connected together and adapted for connection with the power source, a rotatable assembly associated with the stationary assembly and adapted for rotation at a preselected speed in response to magnetic coupling relation of the rotatable assembly with the main winding means and the auxiliary winding means upon the excitation thereof; the improvement comprising a current relay device including contact means connected in series circuit relation with the other of the opposite terminal end portions of the auxiliary winding means and adapted for movement between an open position and a closed position, and a coil connected in series circuit relation with the other of the opposite terminal end portions of the main winding means and operable generally for effecting the movement of said contact means to the closed position thereof upon the energization of the prime mover across the power source, and a PTCR connected in series circuit relation with said contact means and the other opposite terminal end portion of the auxiliary winding means and adapted for energization in response to the closure of said contact means when the prime mover is energized across the power source, said PTCR being initially operable upon its energization when said contact means is closed to pass current to the auxiliary winding means to effect the excitation thereof and said PTCR also being operable to inhibit the passage of the current therethrough to the auxiliary winding means generally when the rotatable assembly attains its preselected speed so that the continued excitation of at least the main winding means thereafter effects the rotation of the rotatable member at the preselected speed thereof when the prime mover is energized across the power source, said coil being responsive to the occurrence of a reduction in the current flow to the main winding means when the rotatable member is rotated at its preselected speed in response to the continued excitation of at least the main winding means so as to effect the movement of said contact means to the open position thereof in order to deenergize said PTCR.

4,161,682

PORTABLE BATTERY CHARGER

William B. Corvette, Rte. #2 Hinton Rd., Covington, Ga. 30209

Filed Apr. 29, 1977, Ser. No. 792,470
Int. Cl.[2] H02J *7/00*; H01M *2/10*
U.S. Cl. 320—2 **11 Claims**



1. A portable battery charger comprising:
(a) a housing having a plurality of parallel partitions defining parallel compartments, said housing being provided with a pair of spaced openings aligned respectively with said two of said compartments therein:
(b) a battery disposed within a remaining compartment;
(c) a battery charger disposed within remaining compartment and electrically connected to said battery;
(d) battery charging cables having proximal ends directly electrically connected to said battery and said battery charger, intermediate portions of said cables being respectively received as U shaped loops in respective other of said compartments; the distal ends of said cables being slideably received in and extending outwardly respectively through said opening in said housing;
(e) battery terminal clamps electrically connected to the ends of said cables, and being larger than said holes for arresting inwardly movement of said cables through said holes externally of said housing; and
(f) means for yieldably urging said intermediate portions of said cables into said compartments sufficiently to yieldably hold said terminal clamps adjacent to their respective holes and in spaced apart condition.

4,161,683

ALTERNATOR FOR A REGENERATIVE FEED-BACK SYSTEM

Lebern W. Stroud, 4620 Biscayne, Fort Worth, Tex. 76117, and Jerry W. Lemons, 7533 Terry Dr., Fort Worth, Tex. 76118

Continuation of Ser. No. 614,904, Sep. 19, 1975, abandoned. This application Sep. 19, 1977, Ser. No. 834,475
Int. Cl.[2] H02P *11/00*
U.S. Cl. 322—87 **15 Claims**

1. In a regenerative feed-back system of the type having the output of a multi-phase alternator coupled to its rotary field to

self-excite the alternator, an improved alternator of the type having a stationary stator with a rotor concentrically located therein, comprising:

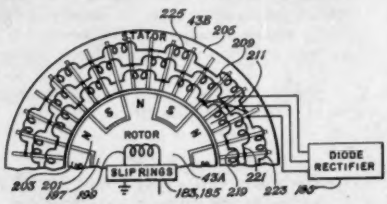
an annular structure formed of ferro-magnetic material defining an annular stator core having a plurality of segments separated by slots which extend in a direction parallel to the axis of said stator core; and

a multi-phase stator winding having for each phase a plurality of coils extending around the stator core on the inside thereof, each of the coils being of 13 A.W.G. electrically conductive wire and enclosing a selected number of segments three turns, whereby each slot has six wires passing through it.

7. A system adapted to be coupled to a multi-phase rectified rotary field system to increase the power and current through regenerative feedback, comprising:

a DC power supply for normally exciting the rotary field of said multi-phase system,

output means coupled to the output of said multi-phase system for applying power to a load upon demand,



means responsive to current flow from the output of said multi-phase system to a load for coupling the output of the multi-phase system to its rotary field to self-excite the multi-phase system, and

means for electrically disconnecting the output of said DC power supply from said rotary field when the output of said multi-phase system is applied to said rotary field,

said multi-phase rectified rotary field system including an alternator of the type having a stationary stator with a rotor concentrically located therein and comprising:

an annular structure formed of ferro-magnetic material defining an annular stator core having a plurality of segments separated by slots which extend in a direction parallel to the axis of said stator core; and

a multi-phase stator winding having for each phase a plurality of coils extending around the stator core on the inside thereof, each of the coils being of 13 A.W.G. electrically conductive wire and enclosing a selected number of segments three turns, whereby each slot has six wires passing through it.

4,161,684

DUAL VOLTAGE AUTOMOTIVE ON-BOARD ELECTRICAL NETWORK SYSTEM

István Ragály, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 3, 1977, Ser. No. 838,636

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1976, 2648372

Int. Cl.² H02J 7/14

U.S. Cl. 322—90 **12 Claims**

1. Dual voltage automotive on-board electrical network system having

a three-phase alternator (1);

a main battery (4);

a main three-phase bridge rectifier (2) connected to the alternator (1) and supplying charging current from the alternator to the main battery;

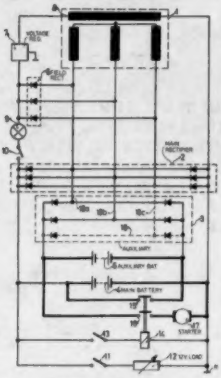
an auxiliary battery (5);

an auxiliary two-phase bridge rectifier (3) supplying charging current from the alternator to the auxiliary battery (5);

mean (18a, 18b, 18c) connecting the output of the alternator (1) to the input of the main rectifier (2) and to the input of the input of the auxiliary rectifier (3) to supply power from the alternator to both said rectifiers;

a main load (12);

main switch means (11) selectively connecting said main load to main battery (4);



an auxiliary load (17) having a voltage rating which is the sum of the nominal battery voltages of both said batteries (4, 5);

and auxiliary switch means (13, 14, 16) connected for energization of said auxiliary load (17);

said auxiliary switch means (13, 14, 16) including a switching connection (15) serially connecting said batteries (4, 5) upon connection of said auxiliary load (17) for energization by said batteries (4, 5) in series.

4,161,685

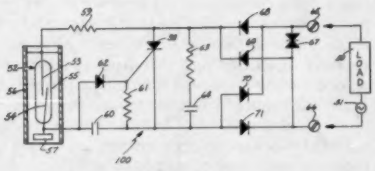
SOLID STATE PROXIMITY SWITCH

Keith Jacob, Ann Arbor, Mich., assignor to Ibec Industries, Inc., New York, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,584

Int. Cl.² H01H 35/38; G05D 7/06

U.S. Cl. 323—19 **13 Claims**



1. A magnetic proximity apparatus comprising:

a base means for supporting said apparatus;

a gated switch means for selectively completing an electrical circuit coupling an electrical source to an electrical load responsive to the position of a ferro-magnetic object, said gated switch means having a control gate for receiving a signal causing said switch means to complete the electrical circuit;

an elongated magnetic actuator means for selectively conditioning said gated switch means between a conductive and nonconductive condition, said actuator means being electrically coupled to said control gate of said gated switch means such that the presence of a ferro-magnetic object axially adjacent an end of said actuator means causes said

actuator means to apply an electrical signal to said control gate making said gated switch means conductive; and

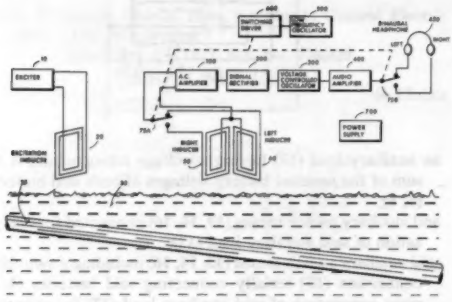
said magnetic actuator means comprising a hollow cylindrical permanent magnet and a reed switch positioned within said permanent magnet and wherein the length of said cylindrical permanent magnet is greater than the length of said reed switch so as to enclose said reed switch within said permanent magnet whereby increasing the proximity of a ferro-magnetic object to an end of said permanent magnet and said reed switch increases the magnetic flux from said permanent magnet through said reed switch sufficiently to close said reed switch.

4,161,686

CONCEALED STRUCTURE TRACING TRANSLATOR APPARATUS INCLUDING POSITION SENSITIVE BITONIC INDICATION MEANS

Harold J. Weber, 20 Whitney Dr., Sherborn, Mass. 01770

Filed Jan. 24, 1977, Ser. No. 762,028
Int. Cl.[2] G01V *3/00*
U.S. Cl. 324—3 **12 Claims**



1. Translator means for providing improved directional acuity and at least the sense of relative, say right or left hand, positional perceptability as to the lay of concealed conductive structurement through the use of a plurality of separate acting inducer means operative to provide plural sensory indication to an operator, said translator including in operative combination:

a. Plural inducer means for the interception of various magnitudes of first frequency electromagnetic field lines, said field lines having been produced sympathetically in the concealed structurement by separate exciter means, said plural inducer means including at least two separate acting electromagnetic field receptor means arranged in corresponsive offset positions therefrom operative to provide second frequency minute alternating current signals the individual levels of which are uniquely proportional to the relative signal strength of said first frequency electromagnetic field lines accordingly intercepted at each of the said receptor means said offset positions;

b. A.C. amplifier means, coupled to said inducer means, operative to increase the magnitude of said second frequency said minute alternating current signal levels produced by each of the said plural electromagnetic field receptor means and thereby produce effectively separate second frequency signal levels of proportionately greater amplitude at the output of said amplifier means;

c. Signal rectifier means, coupled to said A.C. amplifier means, operative to recover the relative amplitude of the said second frequency said alternating current signal levels as effectively separate direct current control signal voltage levels proportional to each said second frequency alternating current signal level;

d. Voltage controlled oscillator means, coupled to said signal rectifier means, operative to provide source means for variable third frequency signal rates proportional to said direct current control voltage levels;

e. Third frequency amplifier means coupled to said voltage controlled oscillator means;

f. Plural sensory indication means, coupled to said third frequency amplifier means, responsive to said third frequency thereby being operative to provide at least, say left and right hand, bi-positional sensory indication;

g. Plural control means, including a source of fourth signal, wherein said control means is:

ga. coupled to said inducer means and said A.C. amplifier means, operative to act with said fourth frequency signal so as to provide at least a distinctly separate, say left and right hand, second frequency response amplification, albeit multiplexed, for each of at least two said second frequency said minute alternating current signal levels; and,

gb. coupled to said third frequency amplifier means as coupled to said plural sensory indication means, operative to act with said fourth frequency signal so as to provide at least two distinctly separate, albeit demultiplexed, say left and right hand, third frequency signal outputs therefrom wherein the consequent periodicity of each said signal output third frequency rate is effectuated by a correlative said second frequency signal level; and,

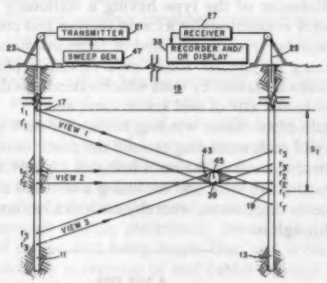
h. D.C. power source means for energizing the active elements of the said translator means.

4,161,687

METHOD FOR LOCATING UNDERGROUND ANOMALIES BY DIFFRACTION OF ELECTROMAGNETIC WAVES PASSING BETWEEN SPACED BOREHOLES

R. Jeffrey Lytle; Darrel L. Lager, both of Livermore; Edwin F. Laine, Alamo, and Donald T. Davis, Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 12, 1977, Ser. No. 832,490
Int. Cl.[2] G01V *3/12, 3/18*
U.S. Cl. 324—6 **9 Claims**



1. A method for locating an anomaly of high electrical contrast within a medium by diffraction of electromagnetic waves at the edges of said anomaly, including the steps of:

drilling first and second boreholes, with the medium to be surveyed for anomalies situated between the boreholes;

lowering an electromagnetic wave transmitting antenna down the first borehole first and second times;

driving said transmitting antenna to transmit electromagnetic waves during said first and second lowerings, the frequency of said electromagnetic waves being within the range of 15–120 MHz;

lowering a receiving antenna down said second borehole first and second times in unison with said first and second lowerings of said transmitting antenna, said receiving antenna having a first vertical separation from the transmitting antenna during said first lowering and a second

vertical separation from the transmitting antenna during said second lowering;

detecting variations of the waves at the receiving antenna during each of said lowerings, said variations being undulatory over a wide range of depth during said lowerings as the antennas approach an anomaly, said undulations being distinctly different when the anomaly is in a direct path between the antennas due to diffraction of said waves away from said receiving antenna due to diffraction of said waves away from said receiving antenna;

recording the depth of said transmitting and receiving antennas upon reception at the receiving antenna of a distinctive variation in the undulations of the waves during each of said lowerings; and

triangulating the lines defined by the positions of said receiving and transmitting antennas upon reception of said distinctive wave variations at the receiving antenna, to thereby locate the anomaly.

4,161,688

CABLE FAULT LOCATING APPARATUS HAVING AN EARTH CURRENT CANCELLER

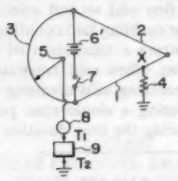
Tadaharu Nakayama, Tokyo, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 14, 1977, Ser. No. 851,564

Claims priority, application Japan, Nov. 13, 1976, 51-137080; Jun. 27, 1977, 52-76410; Jul. 8, 1977, 52-81775; Aug. 25, 1977, 52-102011; Sep. 21, 1977, 52-113545

Int. Cl.[2] G01R *31/08*

U.S. Cl. 324—52 **13 Claims**



1. In a cable fault locating apparatus of the type which comprises a bridge circuit made up of a ratio arm having a movable tap output terminal and connected to open ends of a faulty cable and a sound return cable which are connected to form a loop circuit, a bridge power source connected through a switch to both ends of said ratio arm for providing electrical power to said bridge circuit, and a galvanometer connected between the output terminal of said ratio arm and the ground, the improvement comprising an earth current canceller means having first and second output terminals and connected to said galvanometer so as to cancel a stray earth current which may be produced by moisture or the like entering the faulty point to thereby form a local cell with the metallic part of the faulty cable, the soil, and the grounding metallic material.

4,161,689

METHOD AND APPARATUS FOR REPAIRING PROTECTIVELY LINED REACTOR VESSELS

Seymour Schlosberg, East Brunswick, and Michael J. Lerman, Carteret, both of N.J., assignors to DeDietrich (USA), Inc., Union, N.J.

Continuation of Ser. No. 820,918, Aug. 1, 1977, Pat. No. 4,112,572, which is a division of Ser. No. 663,113, Mar. 2, 1976, Pat. No. 4,078,697. This application Apr. 26, 1978, Ser. No. 900,124

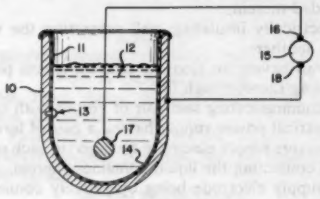
Int. Cl.[2] G01R *31/12*

U.S. Cl. 324—54 **2 Claims**

1. In combination:

a protectively lined reactor vessel for containing conductive liquid of the type comprising a conductive metal support wall and an insulating protective inner liner having at least one break therein;

a repair plug disposed in the wall of said vessel, said repair plug comprising a first metal exposed to said conductive fluid and comprising, (a) an insulating anchor stud anchored into the portion of said metal support wall underlying said break, (b) a sealing gasket disposed on the portion of said protective lining surrounding said break and clamped onto said protective lining throughout a path



surrounding said break, (c) a washer disposed upon said sealing gasket, (d) clamping means mechanically coupling said washer and said gasket onto said protective lining, and (e) means for insulating said anchor stud from the metal support wall; and

break detection means comprising means for detecting a reduction in the electrical resistance between the conductive liquid contained in the interior of the vessel and the conductive metal support wall.

4,161,690

METHOD AND APPARATUS FOR PARTICLE ANALYSIS

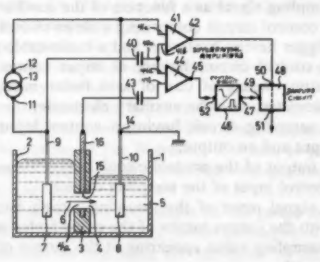
Markus Feier, Regensdorf, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed Jun. 5, 1978, Ser. No. 912,927

Claims priority, application Switzerland, Jun. 27, 1977, 7842/77

Int. Cl.[2] G01N *27/00*

U.S. Cl. 324—71 CP **12 Claims**



1. In a method of analyzing particles suspended in a liquid by means of two vessels for the liquid containing the therein suspended particles and which vessels are separated from one another by an electrically insulating wall which has a through-passing elongate channel, two supply electrodes each of which contacts the liquid in a respective one of the vessels and each supply electrode being connected with a terminal of an electrical power supply, at least one auxiliary electrode contacting the liquid in the channel, the dimension of the auxiliary electrode in a direction essentially parallel to the lengthwise direction of the channel being small in relation to the length of the channel, and at least two feeler means, one of which is operatively associated with a pair of electrodes for determining the timewise course of the potential difference between such electrodes, the improvement which comprises:

forming an auxiliary value correlated to the timewise course

of the potential difference between a predetermined auxiliary electrode and one of the other electrodes;

forming a measuring value correlated to the timewise course of the potential difference between two of the other electrodes; and

sampling the measuring value for obtaining a sampling value corresponding to a particle and as a function of the auxiliary value.

9. An apparatus for analyzing particles suspended in a liquid, especially blood cells, comprising:

a pair of vessels for the liquid containing the particles suspended therein;

an electrically insulating wall separating the vessels from one another;

said wall having an elongate channel means piercingly extending therethrough for

flow communicating said pair of vessels with one another;

an electrical power supply having a pair of terminals;

a respective supply electrode arranged in each of the vessels and contacting the liquid contained therein;

each supply electrode being operatively connected with a respective terminal of the electrical power supply;

at least one auxiliary electrode contacting the liquid in the channel means;

said auxiliary electrode having a dimension extending essentially parallel to the lengthwise direction of the channel which is small in relation to the length of the channel means;

at least two feeler means having input means and output means;

each of said feeler means being operatively connected to a respective pair of said electrodes for detecting the changes as a function of time of the potential difference between such electrodes;

an auxiliary value being formed by the timewise course of the potential difference between said auxiliary electrode and one of the supply electrodes;

a measuring value being formed by the timewise course of the potential difference between the two supply electrodes;

a sampling circuit for sampling the measuring value as a function of a sampling signal for forming a sampling value;

a control circuit having an input and output for forming the sampling signal as a function of the auxiliary value;

said control circuit comprising a series circuit of a Schmitt-trigger having hysteresis and a monostable multivibrator;

said control circuit having an input connected with the output means of one of said feeler means operatively associated with the auxiliary electrode;

said sampling circuit having a control input and a signal input and an output;

said output of the control circuit being connected with the control input of the sampling circuit;

said signal input of the sampling circuit being connected with the output means of the other feeler means; and

the sampling value appearing at the output of the sampling circuit.

4,161,691

MULTI-PURPOSE DIGITAL MEASURING APPARATUS

Stanley L. Vermeers, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 6, 1978, Ser. No. 883,543

Int. Cl.[2] G01R *19/26, 27/02;* G04F *8/00*

U.S. Cl. 324—120 **12 Claims**

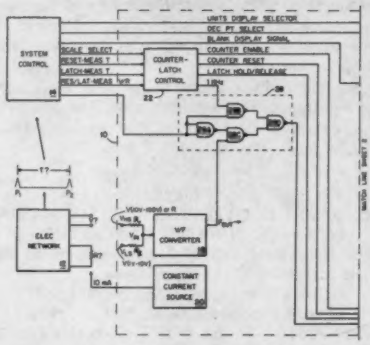
1. Apparatus for selectively measuring voltage and time durations of events, said quantities being associated with an electrical network, said apparatus comprising:

first means for generating a first train of digital pulses when a voltage is measured by said apparatus, the frequency of said first train of digital pulses varying according to the value of voltage measured by said apparatus;

second means for generating a second train of digital pulses of selected constant frequency;

means responsive to a first select signal for selecting said first digital pulse train when voltage is measured by said apparatus, and responsive to a second select signal for selecting said second digital pulse train when the time duration of an event is measured by said apparatus;

counting means receiving said selected digital pulse train for providing a digital output signal which represents the number of pulses of said selected digital pulse train which



are received by said counting means when said counting means is enabled;

control means responsive to a plurality of binary instructions for coupling said first and second select signals to said selecting means, for enabling said counting means to count received pulses during a succession of time periods of equal time duration when said apparatus is measuring voltage, and for enabling said counting means to count received pulses during a single time period when said apparatus is measuring the time duration of an event.

4,161,692

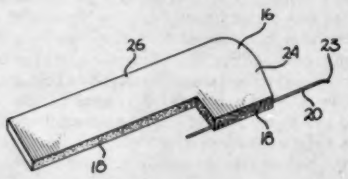
PROBE DEVICE FOR INTEGRATED CIRCUIT WAFERS

John W. Tarzwell, Phoenix, Ariz., assignor to Cerprobe Corporation, Tempe, Ariz.

Filed Jul. 18, 1977, Ser. No. 816,337

Int. Cl.[2] G01R *1/06, 31/02*

U.S. Cl. 324—158 P **12 Claims**



1. A probe device for testing integrated circuit wafers, said device comprising:

(a) a support member having an aperture;

(b) a plurality of ceramic holding members, each said holding member having relatively broad, generally parallel surfaces and relatively narrow edges, at least a portion of one said edge having an electrically conductive path disposed thereon, said holding members coupled to said support member, via one said narrow edge, such that said relatively broad surfaces are generally perpendicular to said support member and such that said holding members extend into said aperture; and

(c) a plurality of probe members, each said probe member coupled to said electrically conductive path on said narrow edge of each said holding member and extending into

said aperture, one or more of said probe members being configured to electrically contact a circuit wafer placed within said aperture.

4,161,693

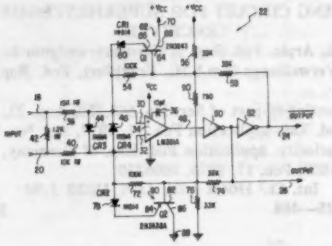
CLAMPED INPUT COMMON MODE REJECTION AMPLIFIER

Peter J. Carlson, Fort Lauderdale, Fla., assignor to Airpax Electronics, Inc., Fort Lauderdale, Fla.

Filed Mar. 9, 1977, Ser. No. 775,957

Int. Cl.[2] H03F *3/45*; G01P *3/48*

U.S. Cl. 324—173 **16 Claims**



1. An operational amplifier having postive and negative differential inputs and an output, a positive power supply terminal, first solid state clamping means coupling said positive input to said positive power supply terminal, a negative power supply terminal, and second solid state clamping means coupling said negative input to said negative power supply terminal whereby excessive common mode voltage input excursions are clamped to avoid false switching of said output, wherein said clamping devices each includes a transistor and a diode.

4,161,694

RADIO RELAY CHANNEL BRANCH CASCADE EXHIBITING UNIFORM TRANSIT-TIME-AND-ATTENUATION-CHARACTERISTICS OF ALL CHANNELS

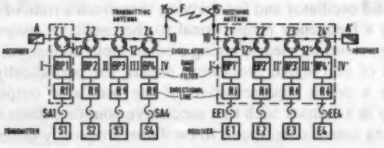
Hans-Werner Weber, Darmstadt, and Hermann Vollhardt, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 24, 1977, Ser. No. 809,807

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1976, 2628906

Int. Cl.[2] H04B *7/14*

U.S. Cl. 325—1 **2 Claims**



1. A multi-channel radio relay system in which a plurality of high-frequency channels are provided in a link between a transmitting and a receiving station, said channels being combined at the transmitting station to form a common high-frequency group over a cascade circuit comprising channel branch elements, each of which contains a circulator and a band-pass filter, and separated at the receiving station over a similar cascade circuit, the allocation of frequencies being such that each channel passes over an equal number of circulators in said link, the edge channel of highest frequency being allotted to the circulator, of one of said cascades, most remote from the antenna associated therewith, and with the circulator, of the other cascade, closest to the antenna associated therewith, the edge channel of lowest frequency being allocated to the circulator of each cascade at the opposite end to that allotted to the highest frequency, all of said circulators being similarly arranged in their respective cascades, the band-pass filter of each cascade connected to the circulator most remote from the associated antenna being detuned by an amount Δf, from its middle channel frequency in the direction of the middle frequency of the channel adjacent in frequency position, and the remaining band-pass filters being tuned to the middle frequency of the channel involved.

4,161,695

TRANSMISSION AND RECEPTION CONTROL CIRCUIT FOR A TRANSCEIVER

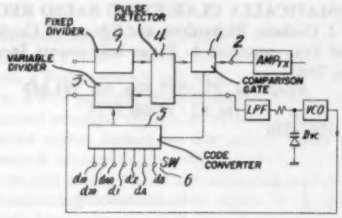
Takao Kakigi, Inagi, Japan, assignor to Cybernet Electronic Corporation, Kanagawa, Japan

Filed May 12, 1977, Ser. No. 796,423

Claims priority, application Japan, May 14, 1976, 51/55174; Jul. 10, 1976, 51/82423

Int. Cl.[2] H04B *1/40*

U.S. Cl. 325—17 **8 Claims**



1. In a transceiver having transmitting and receiving stages, a transmission and reception control circuit comprising:

a voltage-controlled oscillator;

a variable frequency divider connected to the voltage-controlled oscillator for providing a variable output frequency;

changing means for changing the output frequency of the variable frequency divider;

a fixed frequency divider;

means for connecting the fixed frequency divider to a reference frequency source;

a phase detector connected between the frequency dividers and the voltage-controlled oscillator for comparing the output frequencies of the frequency dividers to produce an output to automatically control the voltage-controlled oscillator; and

gate means responsive to the output of the phase detector and an output of the changing means indicative of a prohibited channel for inhibiting the operation of the transmitting and receiving stages.

4,161,696

PULSE TRANSMITTER REFERENCE NETWORKS SUPPLYING ECD CAPABILITY

Milton Dishal, Clifton, and James P. Van Etten, Nutley, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation-in-part of Ser. No. 767,427, Feb. 10, 1977, abandoned, which is a continuation-in-part of Ser. No. 634,308, Nov. 21, 1975, abandoned. This application Feb. 21, 1978, Ser. No. 879,326

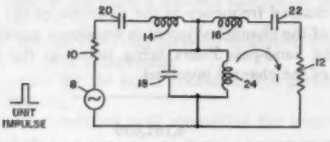
Int. Cl.[2] H04B *1/04*; G01S *1/20*; H03K *5/00, 3/04*

U.S. Cl. 325—163 **10 Claims**

1. A method of varying the phase of RF cycles inside a pulse envelope while maintaining said pulse envelope stationary, said pulse envelope being the pulse shape obtained by connecting

peaks of said RF cycles with an imaginary line, said RF cycles being generated by a reference network which produces a pulse envelope of a predetermined shape comprising the steps of:

impulsing said network with a doublet impulse, said doublet



impulse comprising first and second adjacent pulses of opposite polarity; and

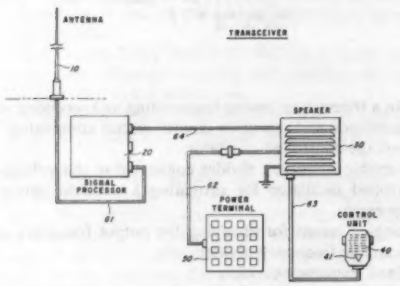
varying the area under at least one of said first and second pulses to vary the phase relationship of said RF cycles within said pulse envelope while maintaining said pulse envelope stationary.

4,161,697

AUTOMATICALLY CLARIFYING RADIO RECEIVER

Michael J. Cochran, Richardson, and Edward R. Caudel, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 27, 1977, Ser. No. 791,449
Int. Cl.[2] H04B *1/16*
U.S. Cl. 325—330 **8 Claims**



1. An automatically clarifying radio receiver comprising:

(a) digital processor means for controlling the radio receiver;

(b) receiver circuit means for receiving and processing radio frequency signals including intermittently received reference frequency signals of a predetermined frequency, said digital processor means including means for generating digital signals representative of the expected frequency of said reference frequency signal;

(c) an oscillator;

(d) programmable counter means coupled to said oscillator and to said digital processor means, said counter means for generating output signals of frequencies selected by said digital processor means, said receiver circuit means being operated by said output signals from said programmable counter means;

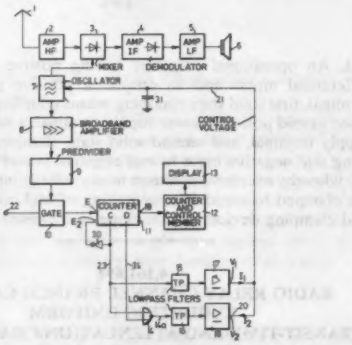
(e) comparator means coupled to said receiver circuit means and to said digital processor means for comparing the actual frequency of received reference frequency signals with the digital signal representative of the expected frequency of said reference frequency signal generated by said digital processor means, said digital processor means being responsive to said comparator means for computing the frequency difference between the actual frequency of said received reference frequency signals and said expected frequency and for controlling said programmable counter means to generate said output signals according to said computed frequency difference thereby adjusting the signal processing of said receiver circuit means to clarify the reception of said radio receiver.

4,161,698

TUNING CIRCUIT FOR SUPERHETERODYNE RECEIVER

Otto Klank, Arple, Fed. Rep. of Germany, assignor to Licentia, Patent-Verwaltungs-G.m.b.H., Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 608,350, Aug. 27, 1975, abandoned. This application Feb. 11, 1977, Ser. No. 767,838
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1974, 2441809; Feb. 17, 1976, 2606230
Int. Cl.[2] H04B *1/06, 1/16;* H03B *3/04*
U.S. Cl. 325—468 **14 Claims**



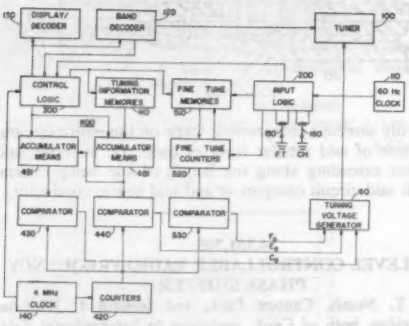
1. In a tuning circuit for a superheterodyne receiver including a local oscillator having a control input and control means for supplying a control voltage to said control input for regulating the frequency of said local oscillator to the value of the rated tuning frequency when the tuning frequency of said oscillator deviates from the rated tuning frequency assigned to the receiving channel, said control means including signal processing means, the output for receiving the output signal from said oscillator and for deriving therefrom a train of pulses having a frequency proportional to the oscillator output frequency, counting means having a count input connected to the output of said signal processing means, for periodically producing a count representative of the oscillator output frequency in a manner such that successive counting states of said counting means correspond to oscillator frequency differences smaller than the differences between adjacent rated tuning frequency values and with selected counting states being associated with the rated tuning frequency values, and signal generating means responsive to the counting state of said counting means for generating said control voltage to correct any deviation in the oscillator output frequency from the rated tuning frequency value; the improvement wherein: said counting means comprises a first binary counter having three stages which counts only to five; and said signal generating means is connected to only the outputs for the second and third stages of said first counter, and is responsive to the signals representing said counting state appearing at same when a deviation from a rated tuning frequency occurs, for generating said control voltage.

4,161,699

SECOND DERIVATIVE MEMORY-SAVING ALL CHANNEL DIGITAL TUNING SYSTEM

Akio Tanaka, Chicago, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jan. 3, 1978, Ser. No. 866,876
Int. Cl.[2] H04B 1/26
U.S. Cl. 325—464 22 Claims



6. The method of operating a television tuning system including a tuner having a nonlinear tuning voltage-versus-frequency characteristic and a channel-number-accessible memory for storing tuning information, comprising the steps of:

storing in said memory reference tuning information, first increment tuning information related to the slope of said characteristic at a base channel and second increment tuning information related to the slope of the slope of said characteristic at successive channel positions;

reading out the reference and first increment tuning informations and the second increments of tuning informations for a selected channel;

computing the nominal tuning information for the selected channel from the read-out tuning informations; and

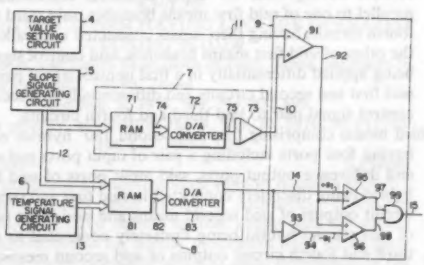
producing a tuning voltage therefrom for said tuner.

4,161,700

ANALOG COMPARATOR

Kenji Fujikata, Hachioji; Norio Yokozawa, Fuchu, and Akinori Shibayama, Tokyo, all of Japan, assignors to Hitachi, Ltd. and Nippon Telegraph and Telephone Public Corporation, both of, Japan

Filed Nov. 22, 1977, Ser. No. 853,885
Claims priority, application Japan, Dec. 10, 1976, 51-148403
Int. Cl.[2] H03K 5/153
U.S. Cl. 328—147 8 Claims



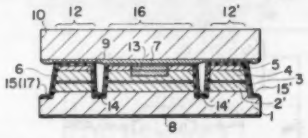
1. An analog comparator comprising first means to generate an input signal having a certain slew rate, second means to set a desired target signal, third means to set a threshold signal corresponding at least to said slew rate, and fourth means to receive the signals from said first, second, and third means and to deliver a predetermined timing signal upon detecting that a level of said input signal has reached a signal level falling within a range established between the level of the target signal and the level of the threshold signal.

4,161,701

SEMICONDUCTOR LASER

Yutaka Takeda, Ohme; Satoshi Nakamura, Hachioji; Naoki Chinone, Kokubunji; Hisao Nakashima, Tokorozawa, and Kazuhiro Kurata, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 24, 1977, Ser. No. 780,789
Claims priority, application Japan, Mar. 26, 1976, 51-32581
Int. Cl.[2] H01S 3/19
U.S. Cl. 331—94.5 H 6 Claims



1. A semiconductor laser comprising:

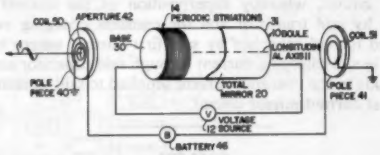
a semiconductor wafer having first and second principal surfaces, a first electrode provided at said first principal surface, a P-N junction formed with an active region at said second principal surface, a current conducting semiconductor region formed on said active region, at least one second semiconductor region formed into a mesa shape on said active region and separated from said current conducting semiconductor region by a groove, a dielectric layer covering said second semiconductor region and said groove, a second electrode formed on said dielectric layer and said current conducting semiconductor region, and a heat sink mounted at said second electrode and being supported by said second semiconductor region and dielectric layer thereon forming a mounting support which is closer to said heat sink than said current conducting semiconductor region.

4,161,702

DISTRIBUTED FEEDBACK FILTER AND LASER

Bernard V. Kessler, Greenbelt; Gerald F. Hoff, Ashton, and James R. Burke, Adelphia, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 28, 1977, Ser. No. 838,778
Int. Cl.[2] H01S 3/19
U.S. Cl. 331—94.5 H 11 Claims



1. An optical device, comprised of:

a boule with a pair of opposed bases normal to a longitudinal axis, prepared from a first semiconductor material having a first type conductivity and an impurity for rendering the first material a second and opposite type conductivity;

a plurality of layers alternately of the first and the second type conductivity defining junction planes normal to the axis;

a reflective coating on all cylindrical surfaces of the boule between the bases;

voltage means of sufficient amplitude to cause an injection

current to flow through the boule, coupled across the bases; and,

field means for applying a uniform magnetic field along the axis between the bases.

4,161,703

SCHMITT TRIGGER SQUARE WAVE OSCILLATOR

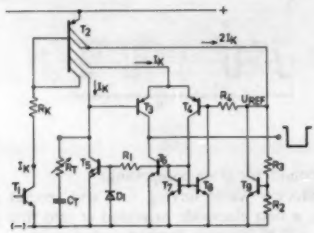
Karl-Diether Nutz, Oedheim, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Fed. Rep. of Germany

Filed Mar. 14, 1978, Ser. No. 886,395

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712369

Int. Cl.[2] H03K *3/295, 3/35*

U.S. Cl. 331—111 **7 Claims**



1. In an oscillator for producing a square wave output signal and including a Schmitt trigger circuit, a capacitor connected for controlling the operation of the Schmitt trigger circuit, a constant current source connected to supply the capacitor with charging current, and current control means connected for causing the discharge current from the capacitor to be consistent with the charging current thereto, the improvement wherein: said oscillator further comprises a variable resistor connected in series with said capacitor to form a series RC element therewith; and a current-driven reference voltage source connected to supply said Schmitt trigger circuit with a reference voltage which determines the switching voltage of said Schmitt trigger circuit; said constant current source comprises a first current mirror circuit connected for simultaneously supplying a constant charging current to said capacitor, a constant current to said Schmitt trigger circuit and a constant current to said reference voltage source; and said current control means comprise a second current mirror circuit including a transistor connected in parallel with said series RC element, said transistor being switchable into a conductive state in which it conducts a current in a direction to discharge said capacitor and having twice the amplitude of the constant charging current supplied to said capacitor by said first current mirror circuit, whereby superposition of the current conducted by said transistor and the constant charging current supplied to said capacitor by said first current mirror circuit results in a discharging current through said capacitor equal in amplitude to the charging current supplied to said capacitor by said first current mirror circuit.

4,161,704

COAXIAL CABLE AND METHOD OF MAKING THE SAME

Robert H. Schafer, Perkasie, Pa., assignor to Uniform Tubes, Inc., Collegeville, Pa.

Filed Jan. 21, 1977, Ser. No. 760,878

Int. Cl.[2] H01P *3/06, 1/20, 11/00, 1/30*

U.S. Cl. 333—33 **14 Claims**

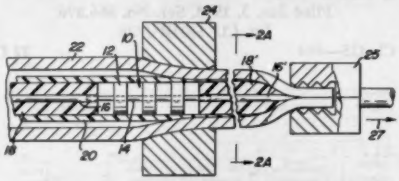
1. A coaxial cable comprising:

(a) at least one center conductor,

(b) at least one circuit component electrically associated with said center conductor and coaxial therewith,

(c) a tubular layer of dielectric material surrounding said circuit component and said center conductor respectively, and

(d) a monolithic jacket of electrically conductive material surrounding said tubular layer and exerting radially inwardly directed compressive force on the entire circumference of said tubular layer of dielectric material, said jacket extending along the length of and being coaxial with said circuit component and said center conductor.



4,161,705

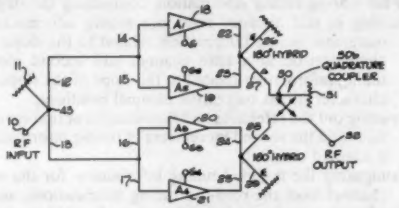
LOW LEVEL CONTROLLABLE RADIO FREQUENCY PHASE SHIFTER

Jeffrey T. Nemit, Canoga Park, and Ronald I. Wolfson, Northridge, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 19, 1977, Ser. No. 861,524

Int. Cl.[2] H03H *7/20, 7/22;* **H01P** *1/18*

U.S. Cl. 333—156 **10 Claims**



1. A signal controlled radio frequency phase shifter comprising:

first means responsive to an RF signal input for in-phase division of said RF signal into two branches substantially equally;

second means comprising first, second, third and fourth circuits each having an RF input terminal and an amplitude control terminal and each providing an RF output at a corresponding output terminal at an amplitude which is a function of a parameter of said control signal applied to the corresponding control terminal, said first and second circuits having their RF input terminals connected in parallel to one of said first means branches, said third and fourth circuits having their inputs connected in parallel to the other of said first means branches, said control signals being applied differentially in a first control signal pair to said first and second circuits and differentially in a second control signal pair to said third and fourth circuits;

third means comprising first and second 180° hybrids each having four ports including a pair of input ports and sum and difference output ports, said input ports of said first hybrid being discretely connected to said first and second circuit outputs of said second means and said input ports of said second hybrid being discretely connected to said third and fourth circuit outputs of said second means;

and fourth means comprising a quadrature coupler having at least three terminals including an output terminal and first and second quadrature related terminals, said coupler first quadrature terminal being connected to the difference output port of said first hybrid coupler and said coupler second quadrature terminal being connected to the difference output port of said second hybrid coupler, said cou-

pler output terminal providing an RF signal having a phase with respect to said first means RF input which is a function of said control signals applied to said second means amplitude control terminals.

4,161,706

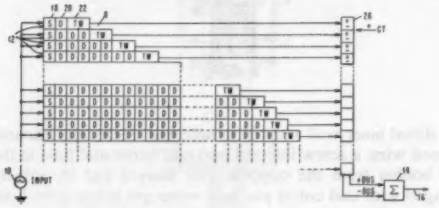
UNIVERSAL TRANSVERSAL FILTER CHIP

James F. Dubil, Warrenton, Va.; Alain M. Falcoz, St-Jeannet; Rene J. Glaise, St. Paul de Vence; Christian A. Jacquart, Gattiere, all of France; Howard N. Leighton, Rockville, Md.; Vladimir Riso, Nice, France, and Raymond J. Wilfinger, LaGrangeville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 12, 1978, Ser. No. 869,069

Int. Cl.[2] H03H *9/28, 7/30;* **G11C** *19/28;* **H03K** *5/156*

U.S. Cl. 333—165 **5 Claims**



1. A transversal filter comprising:

a plurality of channels,

means for feeding a signal into all the channels of the plurality of channels in parallel,

analog shift register delay means in each of the channels for delaying said signal a different amount in each channel, said analog shift register means having at least three parallel shift register segments,

signal splitting means in each channel for placing a portion of said signal on each of the shift register segments to provide each channel with at least three parallel paths, each path carrying a portion of the whole signal transmitted through the channel, and

differential summing means for summing all of the paths in all of the channels together and providing either a positive or negative output signal which is some desired function of the input signal, said summing means having gain setting means in each channel for selecting whether the output of any path in any channel forms a positive or negative increment in the summation to determine the gain of that channel and thereby determine said desired function.

4,161,707

PUSHBUTTON TUNER HAVING LINKAGE OPERATED TUNING SLIDER

Takao Kanai, and Yujiro Mori, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

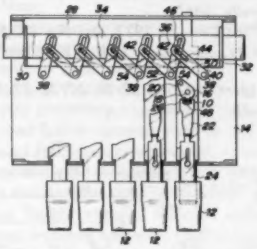
Filed Sep. 9, 1977, Ser. No. 831,699

Claims priority, application Japan, Sep. 20, 1976, 51-111748

Int. Cl.[2] H03J *5/08*

U.S. Cl. 334—7 **5 Claims**

1. In a pushbutton tuner including support means, a plurality of operative means each having a pushbutton connected thereto and positioned on said support means with the associated operative means for similar movement from an inoperative position to an operative position upon depression of the pushbutton, and tuning means positioned on said support means for movement in a direction transverse to the direction of movement of the operative means, the improvement comprising: linkage means responsive to the depression of any selected one of said pushbuttons for moving said tuning means in said transverse direction a distance which varies with the particular pushbutton which is depressed, said linkage means comprising a pair of links associated with each operative means, each pair of links being supported for pivotal movement about parallel pivot axes spaced apart in a direction parallel to said transverse direction, the free end portions of each pair of links overlapping one another and each having elongated slots receiving a projection extending from said tuning means so that as each pair of links assumes different relative angular positions with respect to the associated pivot points the tuning means has a different corresponding position, and there is associated with each of said operative means adjustable tuning control means for engaging at least one of the



confronting edges of the associated pair of links when the associated pushbutton is fully depressed, each of said adjustable control means being lockably adjustable in position in a direction parallel to said transverse direction of movement of said tuning means and so that upon full depression of the associated pushbutton the tuning control means will first engage at least one confronting link edge to pivot the associated links when the pushbutton is partially depressed and upon further depression of the associated pushbutton will slide along the latter edge until it reaches the point of intersection between said confronting edges where further pivotal movement of the links is terminated.

4,161,708

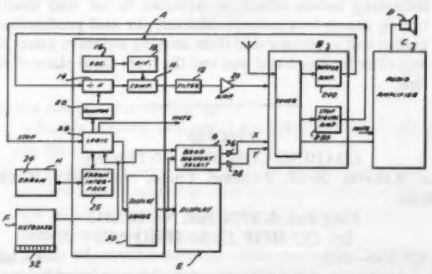
ELECTRONIC TUNING SYSTEM WITH DIGITAL BAND SELECTION

Vincent P. Friberg, Longmeadow, and Chester R. Kruczek, East Longmeadow, both of Mass., assignors to General Instrument Corporation, Clifton, N.J.

Filed Feb. 1, 1978, Ser. No. 874,262

Int. Cl.[2] H03H *5/12;* **H04B** *1/06*

U.S. Cl. 334—15 **18 Claims**



1. An electronic tuning system or the like comprising: a tuner having a varactor tuned resonant circuit comprising a plurality of series connected inductors and band switching means operably connected to said inductors to operably delete selected ones of said inductors from said resonant circuit in accordance with band segment selection signals; a station selector generating station selection signals in accordance with the actuation thereof; control circuitry operably connected to said station selector and comprising means for generating a

varactor control signal in accordance with said station selection signals and means for generating a display code representative of the frequency selected; means for displaying indicia corresponding to said display code; and digital means for generating band segment selection signals, said digital means comprising means for converting said display code into a decimal number and means for decoding said decimal number to form said band segment selection signals.

4,161,709

MICROFORM CAMERA

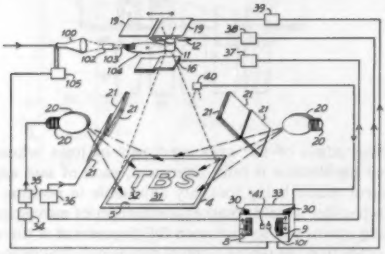
Harry A. H. Spence-Bate, 1 Cheam Pl., Morley, Western Australia, Australia (6062)

Filed Dec. 20, 1977, Ser. No. 862,566

Claims priority, application United Kingdom, Dec. 22, 1976, 53544/76

Int. Cl.[2] G03B *27/76, 27/78, 27/32*

U.S. Cl. 355—38 **15 Claims**



1. A microform camera for photographically copying a record comprising;

a camera lens,

a shutter associated with said lens,

a film holder adapted to move microform film through the back focal plane of said lens for recording successive images on said film,

at least one lens filter mounted to a filter moving means for moving the filter between said lens and the front focal plane of the lens,

shutter timing means for timing the opening of said shutter,

first colour indicating means settable to correspond to the colour of the background of the record to be copied,

second colour indicating means settable to correspond to the predominant colour of the record, and

control means controlled by said first and second colour indicating means which is arranged to set said shutter timing means to a correct exposure for said predominant colour and to actuate said filter moving means to insert the said filter between said lens and the front focal plane of the lens.

4,161,710

LOADING COIL FOR ANTENNA

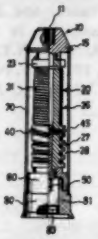
Tadao Kakurai, 39-28, 3-chome, Chiuo, Nakano-ku, Tokyo, Japan

Filed Jan. 6, 1978, Ser. No. 867,313

Int. Cl.[2] H01F *27/30;* **H01Q** *9/22*

U.S. Cl. 336—192 **1 Claim**

1. A loading coil for antenna comprising in combination a coil bobbin consisting of a densely wire-winding portion around which the coil wire is wound densely and a sparsely wire-winding portion provided below and in continuance to said densely winding portion and provided with a spiral groove along which the coil wire is wound sparsely, said sparsely winding portion having formed at its upper end a hole extending horizontally in registration with the topmost end of said spiral groove and also having formed centrally thereof a through-hole extending vertically along the length thereof, an upper snap-in base secured to the top end of said coil bobbin and having connected thereto the upper end of the coil wire, a connector pin inserted into said through-hole in said coil bobbin and positioned such that a hole formed toward the upper end of said pin is in registration with said horizontal hole in said coil bobbin, said connector pin having formed at its lower end a slitted hole, a ring secured to the bottom end of said coil bobbin and having connected thereto the lower end of the coil wire, a cotter pin inserted into and fixed in said horizontal hole in the coil bobbin, said cotter pin having an internally threaded



and slitted inner wall adapted to hold and electrically connect the coil wire, a screw inserted into said horizontal hole in the coil bobbin from the opposite end thereof and threadedly engaged with said cotter pin, said cotter pin being spread out by said screw and thereby electrically connected to the connector pin, a lower snap-in base secured to said ring, said base having provided centrally in its upper portion a hole and also having provided centrally in its lower portion an internally threaded hole, and a coil sleeve securely interposed between said upper and lower snap-in bases.

4,161,711

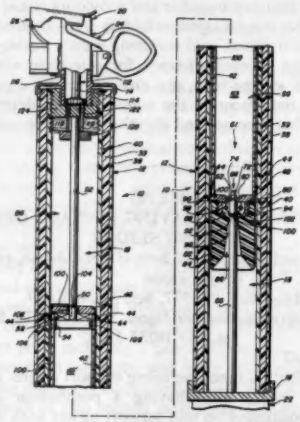
CIRCUIT INTERRUPTING DEVICE

Otto Meister, Arlington Heights, Ill., assignor to S & C Electric Company, Chicago, Ill.

Filed May 24, 1978, Ser. No. 909,146

Int. Cl.[2] H01H *85/38*

U.S. Cl. 337—273 **60 Claims**



60. An improved circuit interrupting device of the type having a reservoir of pressurized dielectric fluid with a port for directing the fluid at an arc, and a pair of relatively movable contacts which receive respective ends of, and elongate, the arc as they move apart, wherein the improvement comprises:

a diaphragm normally closing the port;

means for tearing the diaphragm to open the port as the contacts move apart; and

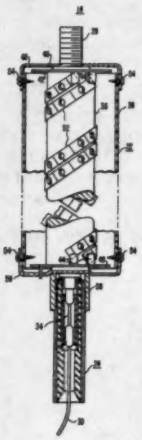
means for forcing the pressurized fluid from the port at a rate higher than that achievable by the fluid pressure alone as the contacts move apart.

4,161,712

CURRENT LIMITING FUSE FOR CAPACITOR

Peter H. Thiel, Bloomington, Ind., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 13, 1977, Ser. No. 787,134
Int. Cl.[2] H01H *85/04*
U.S. Cl. 337—159 **22 Claims**



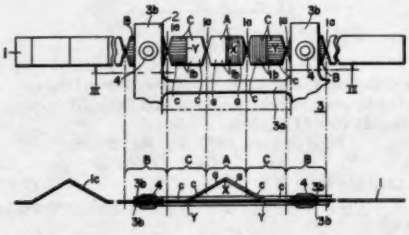
1. A current limiting fusible protective device comprising:
a current limiting fuse section adapted for interruption of high fault currents and comprising a fusible ribbon of conductive material having a cross section with major and minor dimensions, and a fusible conductive wire having a substantially circular cross section; and
a low current expulsion fuse section adapted for interruption of relatively low fault currents and comprising a replaceable fusible conductive link;
said fusible ribbon, said fusible wire, and said fusible link being electrically connected in series circuit relationship.

4,161,713

FUSIBLE ELEMENT FOR ELECTRIC FUSES HAVING A RELATIVELY HIGH VOLTAGE RATING AND A RELATIVELY HIGH CYCLING PERFORMANCE

Philip C. Jacobs, Jr., Newtonville, Mass., assignor to Gould, Inc., Rolling Meadows, Ill.

Filed Mar. 13, 1978, Ser. No. 886,034
Int. Cl.[2] H01H *85/12*
U.S. Cl. 337—161 **6 Claims**



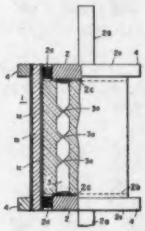
1. A fusible element for electric fuses having a relatively high voltage rating and a relatively high cycling capability comprising in combination
(a) a narrow ribbon of sheet metal subdivided by equidistant points of equally reduced cross-section into a plurality of serially connected fusible element sections;
(b) said plurality of fusible element sections including first fusible element sections angularly bent in the center thereof to form fusible element half-sections separated by non-perforated edges;
(c) said plurality of fusible element sections further including second fusible element sections being planar and arranged in spaced relation from one of said plurality of first fusible element sections;
(d) a fusible element support of electric insulating material extending in a direction longitudinally of said ribbon and having transverse arms arranged in registry with said plurality of second fusible element sections;
(e) fastener means projecting transversely through said arms and said second fusible element sections and firmly affixing said second fusible element sections to said arms; and
(f) said plurality of fusible element sections further including third fusible element sections conductively interconnecting said first fusible element sections and said second fusible element sections, said third fusible element sections being angularly bent in the center thereof to form half-sections separated by non-perforated edges, each of said half-sections of said third fusible element sections having one end co-planar with said second fusible element sections and another end co-planar with one of said half-sections of one of said first fusible element sections.

4,161,714

ELECTRIC FUSE

Philip C. Jacobs, Jr., Newtonville, Mass., assignor to Gould, Inc., Rolling Meadows, Ill.

Filed Oct. 25, 1977, Ser. No. 844,720
Int. Cl.[2] H01H *85/16*
U.S. Cl. 337—253 **6 Claims**



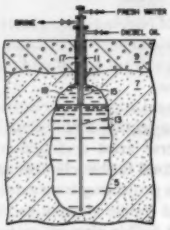
1. An electric fuse including
(a) a fusible element immersed in a pulverulent arc-quenching filler;
(b) a tubular fuse casing of a relatively elastic and relatively soft reinforced synthetic resin having the same cross-section along the entire length thereof housing said fusible element and said filler;
(c) a pair of circular terminal plugs having end surfaces of substantially equal area press-fitted into the ends of said casing and conductively interconnected by said fusible element, said pair of terminal plugs having knurled lateral walls; and
(d) a pair of annular fasteners exposing the axially outer end surfaces of said pair of terminal plugs mounted on said casing each adjacent one of the ends thereof and pressing the wall of said casing radially inwardly into firm engagement with said knurled lateral walls of said pair of terminal plugs.

4,161,715

METHOD AND APPARATUS FOR MEASURING THE INTERIOR DIMENSIONS OF A HOLLOW BODY

Lawrence A. Harris, Schenectady, N.Y., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Sep. 2, 1977, Ser. No. 830,210
Int. Cl.[2] G01S *1/70*; G01F *17/00*; G01S *1/72*
U.S. Cl. 340—16 R **15 Claims**



1. An apparatus for measuring the interior dimensions of the walls of a hollow body, said walls radiate acoustic waves when illuminated by electromagnetic energy, comprising:

(a) means for transmitting a beam of electromagnetic energy toward a location on an interior wall of a hollow body;

(b) means for receiving acoustic waves propagated from said wall location in response to the electromagnetic energy; and

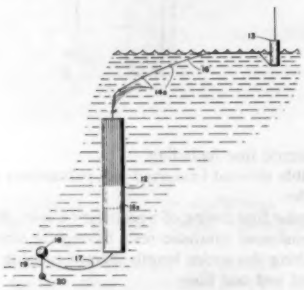
(c) timing means for determining the elapsed time between transmission of the electromagnetic energy and reception of the acoustic waves so that a measurement of the dimension between the apparatus and the wall location is obtained.

4,161,716

VERY LOW FREQUENCY SONOBUOY (VLF SONOBUOY)

Thomas E. Stixrud, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 16, 1977, Ser. No. 861,156
Int. Cl.[2] B63B *21/52*; H04R *1/44*
U.S. Cl. 340—2 **11 Claims**



1. An apparatus for hydromechanically decoupling a hydrophone arrangement disposed in a water medium from the effects of current, wind and surface wave action comprising:

means extending through the water-air interface for transmitting signals representative of impinging acoustic energy on the hydrophone arrangement;

means configured to lie at and below the water-air interface for buoyantly supporting the hydrophone arrangement;

means coupled between the transmitting means and the buoyantly supporting means for permitting the separation thereof;

means connected to the buoyantly supporting means and the hydrophone arrangement for suspending the hydrophone arrangement below the water-air interface;

means carried on the suspending means near the hydrophone arrangement for damping the effects of wind and surface wave action therefrom;

means mounted on the suspending means for forming a catenary thereof;

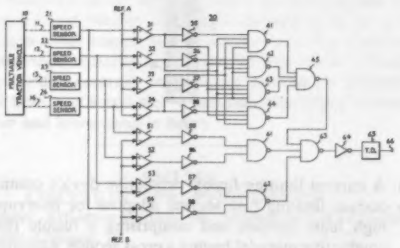
means connected to the suspending means for ensuring the deployment of the aforestated means; and the suspending means including a weak link portion connected to the deployment ensuring means to allow the separation thereof and the subsequent creation of a catenary in the suspending means by the catenary forming means.

4,161,717

LOCKED AXLE DETECTOR FOR A MULTI-AXLE TRACTION VEHICLE

James W. Hoover; James Long, both of North East, and Edward S. Matulevich, Erie, all of Pa., assignors to General Electric Company, Erie, Pa.

Filed Mar. 13, 1978, Ser. No. 885,708
Int. Cl.[2] G08B *21/00*; B60T *8/04*
U.S. Cl. 340—62 **7 Claims**



1. In a traction vehicle of the type having a plurality of axle carrying trucks and a plurality of axles on each of the trucks, an improved locked axle detector comprising:

(a) speed sensing means associated with each of said axles for providing a plurality of speed signals, each of said speed signals being representative of the rotational velocity of a corresponding one of said axles;

(b) first means connected for receiving said speed signals and for generating a locked axle signal when one and only one of said speed signals is representative of an axle rotational velocity lower than a predetermined first threshold level; and

(c) second means connected for receiving said speed signals and for inhibiting said first means except when said speed signals are indicative of at least one axle on each of the trucks rotating at a velocity greater than a predetermined second threshold level.

4,161,718

SUPERVISORY CONTROL SYSTEM

Yitzhak Cohen, Yahud; Yigal Brandman, Ramat Hasharon, both of Israel, and Zvi Eckstien, Highland Park, Ill., assignors to Motorola Israel Ltd., Tel-Aviv, Israel

Filed Jun. 20, 1977, Ser. No. 807,850
Int. Cl.[2] G06F *11/00*
U.S. Cl. 340—146.1 BA **13 Claims**

1. A method for receiving successive signals comprising the steps of:

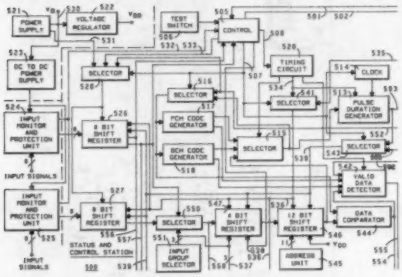
receiving a first signal;

receiving a second signal;

providing a first output signal for the first received signal;

momentarily applying the first output signal to an output signal utilization means;

sensing the status of the output signal utilization means during the application of the first output signal;



comparing the sensed status of the output signal utilization means with the second received signal and providing a second output signal when the sensed status and second received signal are identical;

applying the second output signal to the output signal utilization means.

4,161,719

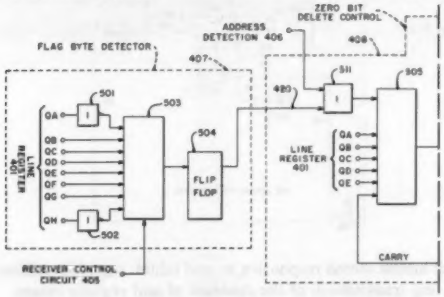
SYSTEM FOR CONTROLLING SYNCHRONIZATION IN A DIGITAL COMMUNICATION SYSTEM

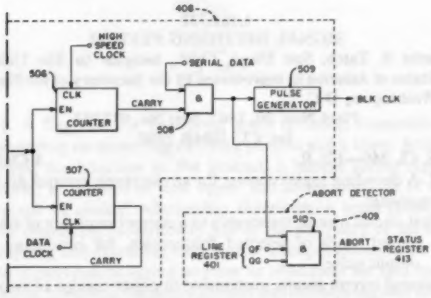
Bipin D. Parikh; Haresh C. Patnaik; Bhagubhai K. Patel, all of Cambridge, Ohio; Prabodh M. Dharia, Des Plaines, Ill.; John J. Kurtz, Cambridge, Ohio; Alfred D. Jenkins, Cambridge, Ohio, and Prakash Y. Mahajan, Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 4, 1977, Ser. No. 839,481

Int. Cl.[2] H04Q *9/00*

U.S. Cl. 340—147 SY **16 Claims**





8. In a communication system for transmitting a frame of data from a transmitting terminal over a serial communication link to a receiving terminal, a control system for controlling the synchronization of said frame so that a frame of data assembled at, and transmitted from, the transmitting terminal may be properly disassembled at the receiving terminal comprising:

at said transmitting terminal,

first means for generating a prescribed flag character made up of a series of bits unique to said flag character,

second means, coupled to said first means, for transmitting said flag character as the initial and terminating characters of which a frame is comprised,

third means, coupled to said first and second means, for selectively inserting into the frame prescribed dummy bits to prevent the transmitted frame from containing a series of bits unique to said flag character except at those portions in the frame where the occurrence of a flag character is intended,

fourth means, coupled to said second and third means, for selectively generating a prescribed abort character made up of a series of bits unique to said abort character in response to a prescribed transmission condition and causing said second means to transmit said abort character while inhibiting the insertion of dummy bits into the abort character by said third means,

at said receiving terminal,

fifth means, coupled to said serial communication link, for monitoring said link for a frame beginning flag character,

sixth means, coupled to said fifth means, for controllably causing the disassembly of a frame of data until the detection of a frame-terminating flag character, and

seventh means, coupled to said fifth and sixth means, for removing dummy bits inserted during the transmission of the frame.

4,161,720

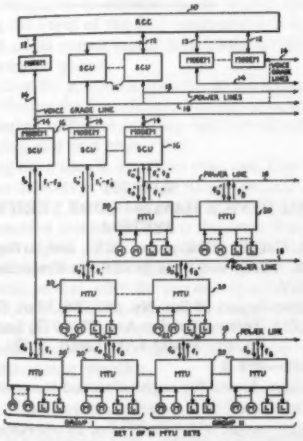
METER TERMINAL UNIT FOR USE IN AUTOMATIC REMOTE METER READING AND CONTROL SYSTEM

Anthony P. Bogacki, Chester, N.H., assignor to General Electric Company, Somersworth, N.H.

Filed May 23, 1977, Ser. No. 799,550

Int. Cl.[2] H04Q *11/00*; H04M *11/04*

U.S. Cl. 340—150 **8 Claims**



1. In a remote automatic utility meter reading system of the type including a control center for receiving measurement data in response to commands transmitted by said control center, each of said commands having first and second address portions and a function code portion, and further including a plurality of section control units for communicating commands and data between said control center and a plurality of meter terminal units associated with each section control unit, an improved meter terminal unit comprising:

(a) register means for receiving commands communicated by an associated section control unit;

(b) a meter including an encoder, said encoder capable of generating data signals representative of a commodity reading measured by said meter;

(c) a plurality of addressable storage means for receiving the data signals from said encoder and storing a commodity reading represented thereby; and

(d) means including first and second address recognition means, said first address recognition means corresponding to the first address portion of said commands and recognizing a specified meter terminal unit address and said second address recognition means corresponding to the second address portion of said commands and recognizing a specified address corresponding to an associated section control unit and further including function code decode means responsive to the contents of the function code portion of a first command received by said register means to selectively effect the transfer of data signals from said encoder into an identified one of said addressable storage means as specified by the function code portion of said first command when the address specified by the first and second address portions of said first command are recognized by said first and second address recognition means, and further responsive to a second command received by said register means to selectively effect the transfer of a commodity reading from a one of said storage means to an associated section control unit as specified by the function code portion of said second command when the addresses specified by the first and second address portions of said second command are recognized by said first and second address recognition means.

4,161,721

ALARM DEVICE HAVING CODE VERIFICATION SYSTEM

Robert M. Conklin, Chappaqua, N.Y., and Arthur T. Human, Norwalk, Conn., assignors to Holmes Protection, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 667,786, Mar. 17, 1976, Pat. No. 4,048,621. This application Aug. 25, 1977, Ser. No. 827,528

Int. Cl.[2] H04Q *9/00;* **G08B** *21/00*

U.S. Cl. 340—168 B **9 Claims**

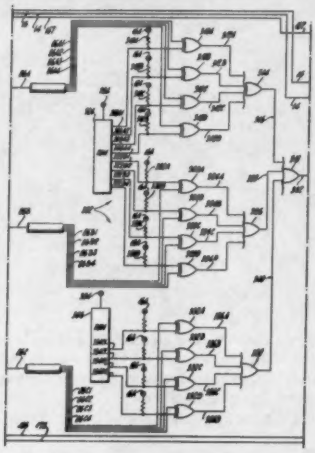
1. An alarm device for registering and transmitting a preselected code to a receiving station comprising:

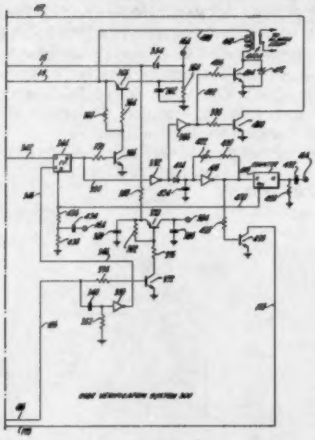
(a) register means under control of an operator for registering a code entered therein;

(b) transmitting means responsive to a transmit signal for transmitting the contents of said register means to the receiving station;

(c) transmit signal generating means for generating said transmit signal;

(d) a comparitor comprising storage means for storing said preselected code, and comparing means connected with said storage and register means for comparing the code registered in said register means with said stored preselected code and for generating an inhibit signal when said codes are different; and,





(e) inhibit means responsive to said inhibit signal for inhibiting transmission of the contents of said register means.

4,161,722

SIGNAL DECODING SYSTEM

Martin S. Tatch, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 30, 1967, Ser. No. 687,963

Int. Cl.[2] H04B *7/00*

U.S. Cl. 340—171 R **3 Claims**

1. A decoding logic receiver for an electronic control device comprising:

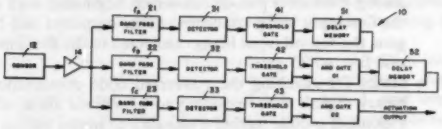
first circuit means, responsive to a correct sequence of transmitted tones of selected frequencies, for producing an output pulse;

second circuit means, responsive to either receipt of two or more simultaneously transmitted tones or receipt of tones transmitted in incorrect sequence, to provide a primary inhibit output pulse;

third circuit means, responsive to the absence of a signal

during selected time intervals, for producing a secondary inhibit output pulse;

actuating means, responsive to receipt of an output pulse from said first circuit means, for producing an actuation output; and



means responsive to either a primary inhibit output pulse or a secondary inhibit output pulse for preventing operation of said actuating means.

4,161,723

FLAGPOLE PARTICULARLY FOR INDICATING GOALS IN SKIING COMPETITIONS

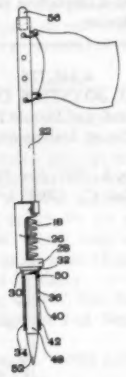
Gianfranco De Vittori, via al Fiume 1a, Viganello, Switzerland

Filed Apr. 7, 1978, Ser. No. 894,343

Claims priority, application Switzerland, Apr. 28, 1977, 5418/77; Jun. 22, 1977, 7684/77

Int. Cl.² E04H *12/32*

U.S. Cl. 340—323 R **4 Claims**



1. A flagpole, for indicating goals in skiing competitions, comprising an upper flag carrying portion and a lower pointed portion for insertion in the ground, a helical spring rigidly secured at its ends to said upper and lower portions of said flagpole in coaxial relationship therewith, a semicylindrical shell embracing substantially half of the periphery of the helical spring and extending over its entire length arranged on one side of said helical spring to form an abuttment for said upper portion, a bushing integral with said shell embracing said lower pointed portion, said bushing having a snug frictional fit permitting said abutment to be angularly rotated relative to said lower pointed portion.

4,161,724

METHOD AND CIRCUIT ARRANGEMENT FOR CONVERTING AN ANALOG QUANTITY INTO A DIGITAL QUANTITY USING A PAIR OF INTEGRATORS

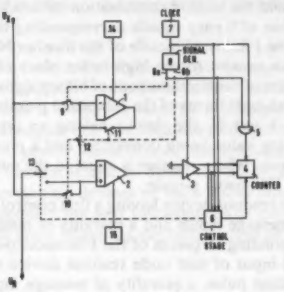
Kurt Smutny, Neunkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 6, 1977, Ser. No. 794,372

Claims priority, application Fed. Rep. of Germany, May 12, 1976, 2621087

Int. Cl.² H03K *13/02*

U.S. Cl. 340—347 NT **7 Claims**



1. In a method for converting an analog quantity into a digital quantity, in which the analog quantity is temporarily connected during a conversion period and in which, further, pulses delivered by a pulse generator are fed to a counter during a time when the reference quantity is connected to the integrating circuit, the improvement comprising repetitively carrying out the following steps:

(a) feeding the analog quantity to a first integrator during the first phase of a conversion period;

(b) feeding the analog quantity to a second integrator during a second phase of the conversion period immediately following the first phase;

(c) feeding the output signal of the first integrator to the second integrator in addition to the analog quantity and bringing the input of the first integrator to 0 by negative feedback of its output signal during said second phase of the conversion period;

(d) connecting the reference quantity to the second integrator only during the first phase of the conversion period for a time period sufficient to bring said second integrator to zero during said first phase; and

(e) counting the pulses in a counter over said time when said reference quantity is connected to said second integrator, whereby during the second phase of the conversion period the second integrator will at the same time integrate the output signal and have transferred to it the signal integrated by the first integrator during the first conversion period, so that, after the second repetition of the first phase of the conversion period, the output obtained by connecting the reference quantity to the second integrator and counting pulses in a counter will be a true representation of the analog quantity.

4,161,725

ANALOG-FIBONACCI p-CODE CONVERTER

Alexei P. Stakhov, ulitsa Chekhova, 49, kv. 16, Taganrog, U.S.S.R.

Filed Nov. 9, 1977, Ser. No. 849,984

Int. Cl.² H03K *13/02*

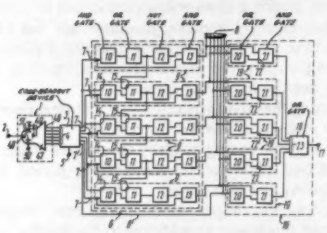
U.S. Cl. 340—347 AD **6 Claims**

1. An analog-Fibonacci p-code converter comprising:

a device for realization of a Fibonacci p-code table comprising an ordered sequence of n-place combinations of binary signals corresponding to minimal forms the Fibonacci

p-code of numbers from zero to $\phi_p(n)-1$, wherein $\phi_p(n)$ is the Fibonacci p-number, and two combinations of binary signals corresponding to a quantitized analog value with the serial number N are located between combinations of binary signals corresponding to minimal forms of the Fibonacci p-code of numbers N−1 and N differing in more than one place, the first combination differing from the combination of binary signals corresponding to a minimal form of the Fibonacci p-code of the number N−1 in the high order place of non-coincident digits of the combinations of binary signals corresponding to minimal forms of the Fibonacci p-codes of the numbers N−1 and N, and the second combination differing from the combination of binary signals corresponding to a minimal form of the Fibonacci p-code of the number N in the low order place nearest to the high order place of non-coincident places of the combinations of binary signals corresponding to minimal forms of the Fibonacci p-codes of the numbers N−1 and N, the device having an input receiving the analog value being converted, and a plurality of message outputs whose number is equal to the number of places in the Fibonacci p-code;

a code readout device having a first control input, a plurality of message inputs and a plurality of message outputs corresponding to places of the Fibonacci p-code; a first control input of said code readout device receiving a code readout pulse; a plurality of message inputs of said code readout device being coupled to said device for realization of the Fibonacci p-code table; the message outputs corresponding to places of the Fibonacci p-code from 0



(p−1)th of said plurality of message outputs of said code readout device being message outputs of said analog-Fibonacci p-code converter corresponding to places of the Fibonacci p-code from 0 to (P−1)th;

a device for conversion of a binary code corresponding to the quantitized analogue value into a minimal form of the Fibonacci p-code of the serial number of the quantitized analogue value having a plurality of inputs and a plurality of outputs which are message outputs of said analog-Fibonacci p-code converter corresponding to places of the Fibonacci p-code beginning with the pth place; the plurality of inputs of said device for conversion of binary code being connected to the outputs of the code readout device corresponding to places of the Fibonacci p-code, beginning with the pth place; a plurality of similar functional stages for identification of a pair of neighboring unity places in the selected combination of binary signals, whose number is equal to the number of places of the Fibonacci p-code, beginning with the pth place; a functional stage corresponding to an ith place of said plurality of the functional stages; a first AND gate of said functional stage having a first input, a second input and an output connected with the first input to the ith output of said code readout device, beginning with i=p, with the second input, to the (i=1)th output of said code readout device, beginning with i=p; an OR gate of said functional stage corresponding to the ith place having a first input, a second input and an output, the first input being connected to the output of said first AND gate and the output being connected to the second output of the OR gate of the functional stage corresponding to the (i−1)th place; a NOT gate of said functional stage having an input and an output, the input being connected to the output of said OR gate; a second AND gate of said functional stage corresponding to the ith place having a first input, a second input and an output which is the ith message output of said analog-Fibonacci p-code converter, beginning with i=p, the first input being connected to the output of said NOT gate, the second input being connected to the first input of said first AND gate;

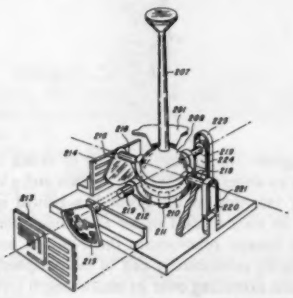
a device for checking the converted code combination of binary signals corresponding to a minimal form of the Fibonacci p-code having a plurality of inputs and an output which is a check output of said analog Fibonacci p-code converter, the inputs being connected to the outputs of said code readout device and to the outputs of said device for conversion of binary code into a minimal form of the Fibonacci p-code; a first OR gate of said checking device having an input and an output which is the check output of said analog-Fibonacci p-code converter; a plurality of similar functional stages of said checking device corresponding to predetermined places of the Fibonacci p-code, beginning with the pth place; the functional stage of said plurality of functional stages corresponding to an ith place of the Fibonacci p-code; a second OR gate of said functional stage corresponding to the ith place of the Fibonacci p-code having p inputs which are the inputs of said checking device corresponding to places of the Fibonacci p-code from the (i−1)th to the (i−p)th place; an AND gate of said functional stage corresponding to the ith place of the Fibonacci p-code having a first input, a second input and an output, the first input being connected to the output of said second AND gate of the ith functional stage of said device for conversion of the readout combination of binary signals which corresponds to the quantitized analog value into a minimal form of the Fibonacci p-code of the serial number of said quantitized analogue value, the second being connected to the output of said second OR gate of the functional stage corresponding to the ith place of the Fibonacci p-code, and the output being connected to a respective input of said fist OR gate of the checking device.

4,161,726

DIGITAL JOYSTICK CONTROL

David C. Burson, Garland, and Harold D. Larson, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 6, 1977, Ser. No. 785,144
Int. Cl.[2] G06F *3/02*
U.S. Cl. 340—365 R **7 Claims**



5. A digital joystick control comprising:

(a) a platform having a centrally-located circular opening provided therein;

(b) a base member depending from said platform and having

respective pairs of side and end support members defining a chamber in registration with the circular opening in said platform;

(c) a joystick including an elongated shaft having a spherical ball on one end thereof, the elongated shaft of said joystick being disposed outwardly of said platform with said spherical ball being partially received within said chamber, and protruding outwardly of the circular opening in said platform;

(d) first and second socket members mounted within said chamber, said first socket member comprising a cup-shaped member in which said ball is seated, said cup-shaped member having an elongated slot disposed substantially perpendicular to the side support members and being pivotably connected to said side support members for movement about an axis perpendicular thereto, said second socket member comprising an arcuate strap extending about said cup-shaped member in traverse relationship thereto, said arcuate strap having an elongated groove disposed substantially perpendicular to the end support members and being pivotably connected to said end support members for movement about an axis perpendicular thereto;

(e) said ball having a pin member extending through the slot in said first socket member and into the groove in said second socket member thereby interconnecting said first and second members with said joystick to provide a swivel joint between said ball and said first and second socket members to enable movement of said shaft about said ball in any direction with respect to said platform;

(f) first and second circuit boards mounted in fixed relation to said base member, each of said circuit boards including a plurality of conductive wiper arms extending outwardly thereof; and

(g) first and second plate members fixably connected to said first and second socket members, respectively, for pivotal movement therewith, each of said plate members having a patterned surface presenting conductive and non-conductive regions in opposing relation to said circuit board with said wiper arms engaging the patterned surfaces of said plate members, the locations of the conductive and non-conductive regions of the patterned surface of said plate members with respect to said wiper arms being changeable in response to movement of the shaft member of said joystick.

4,161,727

PROCESS FOR GENERATING AND TRANSMITTING DIFFERENT ANALOG MEASURED VALUES TO A CENTRAL CONTROL FROM A PLURALITY OF FIRE ALARM CIRCUITS WHICH ARE ARRANGED IN THE FORM OF A CHAIN IN AN ALARM LOOP

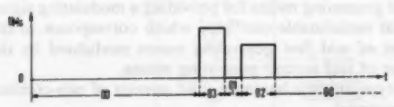
Peer Thilo, and Otto W. Moser, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 4, 1977, Ser. No. 821,840

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641489

Int. Cl.² G08B *23/00*

U.S. Cl. 340—518 **6 Claims**



1. In a process of transmitting analog measuring value signals to a central control from a plurality of alarm circuits which are connected in the form of a chain in an alarm line and which are interrogated to produce analog measuring signals, and during which process a first voltage is applied to the alarm line to charge capacitors in the alarm circuits and then the alarm line is disconnected prior to an interrogation and fire detectors of the alarm circuits remain powered by their respective capacitors, and during which process a second voltage is applied to the alarm line so that a switching device in each alarm circuit operates to connect the following alarm circuit in the chain to the alarm line with a delay representing the measuring value of the connecting alarm circuit, and in which process the respective alarm circuit address is read from the number of preceding increases in alarm line current and the associated measuring value is derived from the length of the respective switching delay, the improvement therein comprising the steps of:

applying the first voltage to the alarm line as a full line voltage for a time sufficient to charge the capacitors and then removing the first voltage from the alarm line for an interval which is longer, at least by a multiple, than the sum of the charging and interrogation times permitting the capacitors to power the detectors; and applying a second voltage to the alarm line to cause the alarm circuits to cause the switching devices of each alarm circuit to sequentially connect the next following alarm circuit to the alarm line to place its analog measuring value on the alarm line.

4,161,728

ELECTRONIC DISPLAY APPARATUS

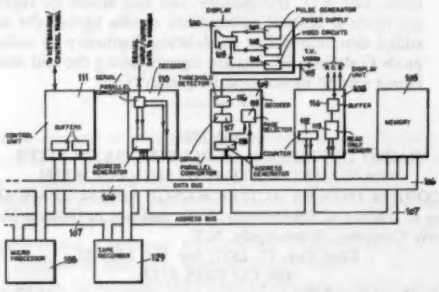
Edward F. Insam, Harrow, England, assignor to The General Electric Company Limited, London, England

Filed Sep. 1, 1977, Ser. No. 829,710

Claims priority, application United Kingdom, Sep. 6, 1976, 36842/76

Int. Cl.² G06K *15/20*

U.S. Cl. 340—750 **5 Claims**

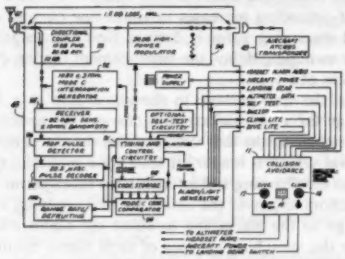


1. Apparatus for the display of information comprising a television-type display, character generator means for generating video signal elements for said display in response to data signals representing characters and symbols to be displayed, at least one receiver means for receiving and decoding coded signals including coded data signals, data storage means, a multiconductor bus arrangement over which data signals are transferred in parallel mode between said receiver means, said storage means and said character generator means, and a multiconductor address bus arrangement to which address signals are applied in parallel mode to control the transfer of said data signals on said data but to the required destination.

4,161,729
BEACON ADD-ON SUBSYSTEM FOR COLLISION AVOIDANCE SYSTEM

Bernard A. Schneider, 8984 Bellefontaine Rd., Dayton, Ohio 45424

Filed Feb. 9, 1978, Ser. No. 876,443
Int. Cl.[2] G01S 9/56
U.S. Cl. 343—6.5 R 4 Claims



1. In an air traffic control radar beacon system (ATCRBS), having an air traffic control (ATC) transponder with ATCRBS mode C altitude information signal reply, cooperating with an antenna, the improvement, a beacon add-on subsystem for collision avoidance system (BASCAS), for providing collision avoidance indication, said improvement comprising:

a. means cooperating with the said ATC transponder and the said antenna for storing said mode C altitude information,

b. means for radiating said mode C altitude information with an added determined first modulation frequency;

c. means cooperating with the said antenna for receiving a mode C altitude information signal having an added determined first modulation frequency and receiving a mode C altitude information signal reply having an added determined second modulation frequency;

d. means for comparing the said stored altitude information with the received altitude information from said signal reply having said second modulation frequency and providing an indication responsive to the said comparison; and

e. said means for radiating cooperating with the said antenna, said ATC transponder, and said means for receiving mode C altitude information signals having the said added determined first modulation frequency to radiate mode C altitude information signals having the said determined second modulation frequency.

4,161,730
RADIO DETERMINATION USING SATELLITES TRANSMITTING TIMING SIGNALS WITH CORRECTION BY ACTIVE RANGE MEASUREMENT

Roy E. Anderson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 17, 1977, Ser. No. 842,402
Int. Cl.[2] G01S 5/12
U.S. Cl. 343—6.5 R 15 Claims

1. A method of radio determination using a plurality of earth satellites having known locations and including satellites that simultaneously transmit timing signals at precisely known intervals, comprising the steps of

receiving at an object being located the timing signals transmitted by first and second satellites and measuring the time-of-arrival of each timing signal with respect to a clock to derive the one-way ranging times and therefore the ranges from said first and second satellites to the object,

computing the approximate position fix of the object from the known locations of said first and second satellites and the ranges, and also computing from the satellite locations a hyperbolic line of position for the object extending through the approximate position fix and along which the approximate position fix is displaced by clock error,

independently determining a line of position of the object by performing a two-way active range measurement made through an earth satellite,

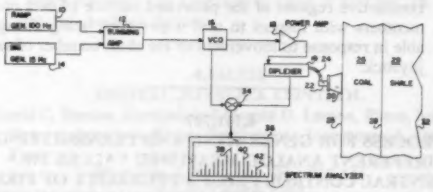
determining the true position fix of the object at the intersection of said hyperbolic line of position and independently determined line of position, and

resetting said clock to correct for the clock error which is dependent upon the distance between the approximate and true position fixes.

4,161,731
THICKNESS MEASUREMENT SYSTEM

Thomas A. Barr, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 31, 1977, Ser. No. 847,277
Int. Cl.[2] G01S 9/24
U.S. Cl. 343—14 4 Claims



1. A frequency modulated CW radar thickness measurement system comprising:

a frequency modulatable oscillator;

first signal generating means for generating a generally triangular-shaped electrical waveform signal of a frequency of 70 to 200 Hz;

second signal generating means for generating an electrical signal of a frequency of 3 to 30 Hz;

signal combining means responsive to said first and second signal generating means for providing a modulating signal to said modulatable oscillator which corresponds to the output of said first generating means modulated by the output of said second generating means;

a horn-type antenna having a solid interior of non-conductive material;

transmitting means responsive to said modulatable oscillator for coupling a replica of the output of said modulatable oscillator to said antenna means, whereby a signal is transmitted from said antenna;

receiving means coupled to said antenna and said frequency modulatable oscillator for providing a difference signal; and

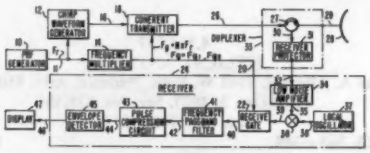
frequency indicating means responsive to the output of said receiving means for indicating difference frequencies, which frequencies are representative of range of a reflection from said antenna, whereby the difference in distance between reflections is representative of opposite surfaces, and thus indicative of the distance between said surfaces and thereby the thickness of said body.

4,161,732

GATED PULSE COMPRESSION RADAR

R. Noel Longuemare, Jr., Ellicott City, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 12, 1976, Ser. No. 741,439
Int. Cl.[2] G01S *9/233*
U.S. Cl. 343—17.2 PC **18 Claims**



1. A method of operating a pulse compression coherent radar for obtaining target information comprising the steps of:

generating a plurality of sequences of spaced apart pulses, each said sequence having a predetermined duration and frequency bandwidth amenable to pulse compression, said spaced apart pulses in each of said sequences having a constant pulsewidth and pulse spacing to provide a fixed repetition rate for each of said sequences which is greater than said frequency bandwidth of said respective sequence of pulses,

transmitting said plurality of sequences of spaced apart pulses,

receiving a constant pulsewidth portion of each target reflected pulse of a sequence of pulses during time gated intervals of constant duration less than said pulse spacing and at said fixed repetition rate between transmitting each spaced apart pulse of a sequence and after transmitting a sequence to provide a uniform receive duty cycle to the entire length of a received sequence of pulses,

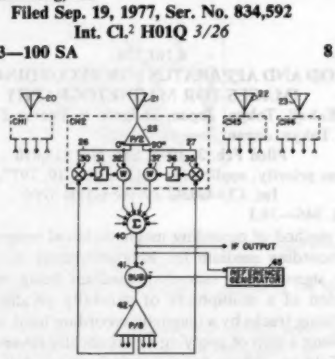
compressing an entire length of a received sequence of target reflected pulses to generate target information.

4,161,733

NULL STEERING APPARATUS INCLUDING WEIGHT OSCILLATION ELIMINATING MEANS

Gregory H. Piesinger, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 19, 1977, Ser. No. 834,592
Int. Cl.[2] H01Q *3/26*
U.S. Cl. 343—100 SA **8 Claims**



1. In a multiple antenna array including null steering apparatus of the type utilizing reference signal generating means for preventing a null on a desired signal, weight oscillation eliminating means comprising:

(a) feedback means associated with each antenna in the array for adjusting the amplitude and phase of signals therein so that unwanted signals from the array are cancelled;

(b) reference signal producing means including a closed circuit coupled to said feedback means with means for selectively picking off at least a portion of a desired signal and circuitry utilizing the picked off portion to generate a reference signal, which reference signal is applied to said feedback means to prevent said feedback means from forming a null on the desired signal; and

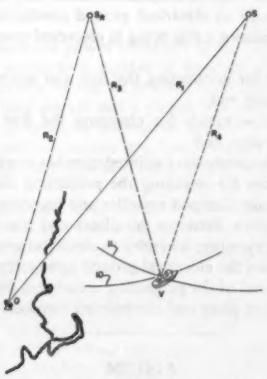
(c) phase shifting means coupled into the closed circuit of said reference signal producing means for adjusting the phase of the reference signal to compensate for phase shifts between the desired signal and the reference signal.

4,161,734

POSITION SURVEILLANCE USING ONE ACTIVE RANGING SATELLITE AND TIME OF ARRIVAL OF A SIGNAL FROM AN INDEPENDENT SATELLITE

Roy E. Anderson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 17, 1977, Ser. No. 842,401
Int. Cl.[2] G01S *1/20*
U.S. Cl. 343—100 ST **12 Claims**



1. A method of position surveillance using a plurality of satellites having known locations and including a first satellite that transmits timing signals, comprising the steps of

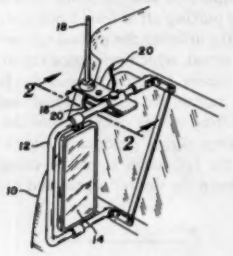
receiving at an object to be located and at a fixed earth station the timing signal transmitted by said first satellite,

performing a two-way active range measurement after reception of said first satellite timing signal at the earth station by transmitting an active ranging signal from the earth station through a second satellite to the object and back, to thereby derive the ranging time between said second satellite and object,

measuring the time of arrival of said first satellite timing signal at the object relative to reception of said active ranging signal at the object and deriving the elapsed time interval therebetween, and transmitting said elapsed time interval to the earth station,

computing at the earth station the position fix of said object from the known locations of said first and second satellites and earth station, the elapsed time interval measured at the object, and the ranging time between said second satellite and object, and displaying the position fix so obtained.

4,161,735
DETACHABLE ANTENNA MOUNT
Norbert R. Zylla, 15253 Yakima St. NW., Anoka, Minn. 55305
Filed May 22, 1978, Ser. No. 908,126
Int. Cl.[2] H01Q 1/32
U.S. Cl. 343—713 11 Claims



1. A detachable antenna mount for mounting an antenna to a projecting metal member on a vehicle, permitting connection of the antenna to an antenna connection cable, and providing an electrical ground connection for the antenna connection cable, the detachable antenna mount comprising:

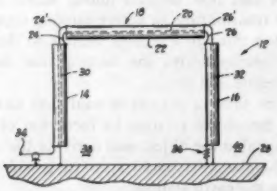
first and second plates having clamping portions for holding the projecting member therebetween, at least the first plate being of an electrically conductive material, the first plate further having a receiving portion at which the antenna and antenna connection cable may be connected together with an electrical ground conductor of the antenna connection cable being in electrical contact with the first plate;

hinge means for connecting the first and second plates together at one end;

clamping screw means for clamping the first and second plates together; and

an electrically conductive pointed member connected to one of the plates for engaging the projecting member when the plates are clamped together and providing an electrical connection between the plates and the metal of the projecting member; whereby an electrical ground connection between the electrical ground conductor of the cable and the metal of the projecting member is provided by at least the first plate and the pointed member.

4,161,736
DIRECTION FINDING ANTENNA AND SYSTEM
David J. Goodman, 3305 DeSota Ave., Cleveland Heights, Ohio 44118
Continuation-in-part of Ser. No. 758,591, Jan. 12, 1977, Pat. No. 4,115,780. This application Sep. 18, 1978, Ser. No. 943,331
Int. Cl.[2] H01Q 1/48, 21/08
U.S. Cl. 343—739 8 Claims



1. An antenna comprising

two spaced-apart tubular monopoles extending linearly from a ground plane perpendicular to the ground plane;

a coaxial transmission line extending linearly between said monopoles, said transmission line being a dielectric line section comprising inner and outer conductors;

means to top-connect the inner conductor of said transmission line to said monopoles; and

ground means grounding the outer conductor to ground, said ground means comprising at least one ground lead extending within one of said monopoles.

4,161,737
HELICAL ANTENNA
Eugene A. Albright, 1742 W. Rose, Phoenix, Ariz. 85015
Filed Oct. 3, 1977, Ser. No. 838,484
Int. Cl.[2] H01Q 1/36
U.S. Cl. 343—749 8 Claims

1. An antenna including in combination:

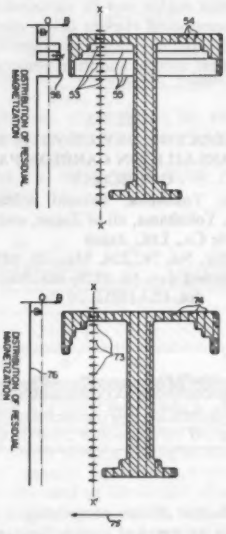
an elongated support member for supporting an antenna coil thereon;

a helical stepped, tapered conductive antenna winding on said support member comprising at least first, second and third conductively interconnected winding sections each having a different pitch in a stepped progression from the first to the third section, and first and second tightly wound loading coils located respectively, between the first and second sections, and the second and third sections of said winding, said first and second loading coils comprising stepped, tapered windings, respectively.

4,161,738
METHOD AND APPARATUS FOR RECORDING LATENT IMAGES FOR MAGNETOGRAPHY
Norio Kokaji, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Feb. 3, 1978, Ser. No. 875,010
Claims priority, application Japan, Feb. 10, 1977, 52-13957
Int. Cl.[2] G03G 19/00; G11B 5/09
U.S. Cl. 346—74.1 4 Claims

1. A method of recording magnetic latent images in a magnetic recording medium for Magnetography in response to picture signals, said recording medium being receptive to imposition of a multiplicity of generally parallel, polarized magnetizing tracks by a magnetic recording head, said method comprising a step of applying a periodically reversing magnetizing field to said medium in response to a picture signal of black color in order to generate a track thereon having a periodically reversing magnetic polarity, and a step of applying a saturation magnetizing field of uniform predetermined

polarity to said medium in response to a white color picture signal in order to generate tracks of uniform polarity in regions



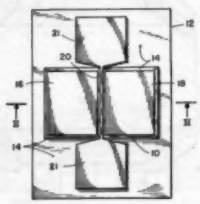
of said recording medium representing white color regions of the recorded picture.

4,161,739

MICROWAVE InP/SiO_2 INSULATED GATE FIELD EFFECT TRANSISTOR

Louis J. Messick, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 27, 1977, Ser. No. 846,070
Int. Cl.[2] H01L *29/78*
U.S. Cl. 357—23 **4 Claims**



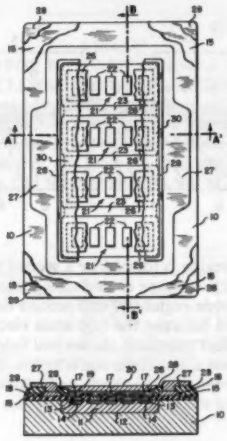
1. An insulated gate field effect transistor comprising:
a semi-insulating InP substrate;
semiconducting n-type InP material disposed on said substrate;
a source contact and a drain contact spaced apart and disposed on said semiconducting InP material;
a layer of silicon dioxide disposed over said semiconducting InP material in the space between said source and drain contacts; and
a gate electrode disposed on said layer of silicon dioxide.

4,161,740

HIGH FREQUENCY POWER TRANSISTOR HAVING REDUCED INTERCONNECTION INDUCTANCE AND THERMAL RESISTANCE

Richard H. Frey, Hampton, N.J., assignor to Microwave Semiconductor Corp., Somerset, N.J.

Filed Nov. 7, 1977, Ser. No. 849,302
Int. Cl.[2] H01L *29/72*
U.S. Cl. 357—36 **4 Claims**



1. In a microwave power transistor of the type comprising a base pocket active area capable of generating heat to be removed, a plurality of spaced emitter rows within the boundaries of said base pocket and a plurality of discrete base areas closely spaced between successive spaced emitter rows, an improved electrical contact structure comprising:
bonding pad means on two sides of said base pocket active area;
a finger electrode structure for making electrical contact with said discrete base areas, said fingers extending across said base pocket active area for making electrical contact with said bonding pad means;
an insulating layer overlying said finger electrode structure in the region overlying said base pocket active area; and
emitter bonding plate means for making electrical contact with said emitter rows, said emitter bonding plate means overlying at least a portion of said base pocket active area and being insulated from said finger electrode structure by said insulating layer.

4,161,741

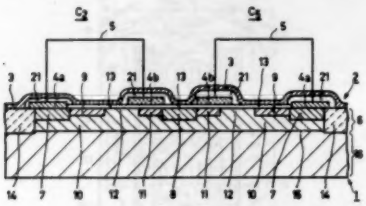
SEMICONDUCTOR MEMORY DEVICE

Marnix G. Collet, Eindhoven, Netherlands; Roelof H. W. Salters, and Joannes J. M. Koomen, both of Sunnyvale, Calif., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 11, 1977, Ser. No. 814,650
Claims priority, application Netherlands, Feb. 4, 1977, 7701172
Int. Cl.[2] H01L *27/02*
U.S. Cl. 357—41 **25 Claims**

1. A semiconductor device having a semiconductor memory element in particular suitable for use in a random access memory, comprising a semiconductor body having a surface-adjoining surface region of mainly one conductivity type and having a first field effect transistor, which comprises two main electrode regions of one conductivity type having therebetween a channel region of said one conductivity type and a surface situated gate region of opposite conductivity type forming a part of the semiconductor body, by means of which gate region a depletion region extending at least into the chan-

nel region can be induced in the semiconductor body, said gate region forming a charge storge region in which information can be stored in the form of electrical charge, which information can be read out non-destructively by determining the conductivity in the channel region between the main electrode regions, characterized in that the memory element comprises a second field effect transistor, which is of the insulated gate variety, and which comprises two main electrode regions one of which is formed by said charge storage region and the other



main electrode region is formed by a second surface region of the same conductivity type as said charge storage region, and both main electrode regions of said second field effect transistor being located between the two main electrode regions of said first field effect transistor, the second field effect transistor comprising at least a gate electrode which is insulated from the surface of the semiconductor body and which is coupled electrically to one of the main electrode regions of the first field effect transistor.

4,161,742

SEMICONDUCTOR DEVICES WITH MATCHED RESISTOR PORTIONS

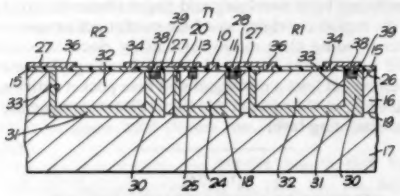
Jeffrey Kane, Cheadle Hulme, England, assignor to Ferranti Limited, Hollinwood, England

Continuation of Ser. No. 710,746, Aug. 2, 1976, abandoned. This application Feb. 8, 1978, Ser. No. 876,137

Claims priority, application United Kingdom, Aug. 2, 1975, 32401/75

Int. Cl.[2] H01L *27/04, 27/02, 29/72*

U.S. Cl. 357—48 **12 Claims**



1. A semiconductor device in a semiconductor body comprising:

(a) first and second resistors, said first resistor having a greater impedance than said second resistor;

(b) said first resistor including at least first and second substantially-matched resistor portions, and means for electrically connecting said first and second resistor portions to form said first resistor;

(c) said second resistor including at least a third resistor portion, each of said first, second and third resistor regions being matched to each other to have substantially similar electrical characteristics and to provide said first and second resistors of accurately determinable impedances; and

(d) each of said first, second and third resistor portions isolated individually within said semiconductor body by an isolating P-N junction and an associated surrounding diffused region, said associated surrounding regions being isolated from each other within said semiconductor body, each of said isolating P-N junctions being disposed between a resistor region and its surrounding region, said associated surrounding regions being made substantially wholly of a material having a lower resistivity than that of each of said first, second and third resistor portions.

4,161,743

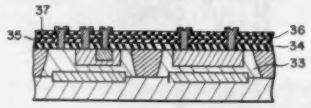
SEMICONDUCTOR DEVICE WITH SILICON CARBIDE-GLASS-SILICON CARBIDE PASSIVATING OVERCOAT

Toshio Yonezawa, Yokosuka; Takashi Ajima, Tokyo, and Masato Uchida, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 782,224, Mar. 28, 1977, abandoned. This application Jun. 14, 1978, Ser. No. 915,541

Int. Cl.[2] H01L *29/34*

U.S. Cl. 357—54 **22 Claims**



1. A semiconductor device comprising a semiconductor substrate including an exposed surface having a plurality of P-N junctions disposed thereon, and an insulative and protective film, said film including a first silicon carbide layer adhered to and substantially covering said surface; a layer of a silicate glass adhered to and substantially covering said first silicon carbide layer, said silicate glass being selected from the group consisting of P-SG, P.As-SG, and P.Sb-SG where "SG" means "silicate glass"; and a second silicon carbide layer adhered to and substantially covering said silicate glass layer.

4,161,744

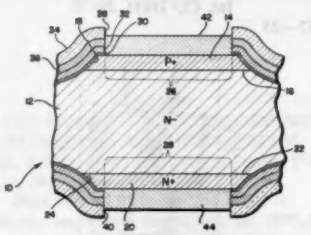
PASSIVATED SEMICONDUCTOR DEVICE AND METHOD OF MAKING SAME

Theodore A. Blaske, Plano, and Ho Y. Yu, Richardson, both of Tex., assignors to Varo Semiconductor, Inc., Garland, Tex.

Filed May 23, 1977, Ser. No. 799,467

Int. Cl.[2] H01L *29/04*

U.S. Cl. 357—59 **5 Claims**



1. A passivated semiconductor device comprising: a semiconductor body of monocrystalline silicon substrate material including a surface region having dopant material incorporated therein to form a diffusion layer, the boundary region between said layer and the parent substrate material defining a semiconductor junction; and a passivation film on selected portions of the semiconductor body and bridging over said junction to reside on adjacent surfaces of said layer and said parent substrate material, said film including a first, comparatively thin base coat of substantially undoped polycrystalline silicon material intimately contacting said semiconductor

body, and a second coat disposed on said base coat, including a layer of said polycrystalline silicon material doped with oxygen.

4,161,745

SEMICONDUCTOR DEVICE HAVING NON-METALLIC CONNECTION ZONES

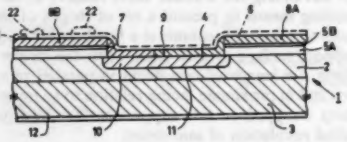
Arie Slob, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 27, 1977, Ser. No. 837,032

Claims priority, application Netherlands, Nov. 19, 1976, 7612883

Int. Cl.² H01L *29/04, 23/48, 29/44*

U.S. Cl. 357—59 **14 Claims**



1. A semiconductor device having a semiconductor body of monocrystalline silicon, which device comprises at least one semiconductor circuit element having at least first and second active zones of opposite type conductivities, an electrically insulating layer provided on the surface of said semiconductor body and having at least one window, and a silicon layer which extends on the insulating layer and on the silicon surface within the window and which comprises a first layer part of a first type conductivity and a second layer part of a second type conductivity opposite to that of the first and adjoining said first layer part at least within the window, the first layer part of the silicon layer within the window forming an electrode and the first layer part outside the window on the insulating layer forming a connection conductor of said first active zone of the first type conductivity, and the second layer part of the silicon layer within the window forming an electrode and the second layer part outside the window on the insulating layer forming a connection conductor of said second active zone of the second type conductivity.

4,161,746

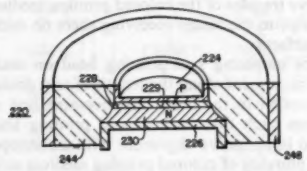
GLASS SEALED DIODE

Joseph E. Johnson, Churchill; John A. Ostop, Greensburg, and David L. Moore, Jeannette, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 28, 1978, Ser. No. 891,090

Int. Cl.² H01L *23/02*

U.S. Cl. 357—73 **18 Claims**



1. A semiconductor diode, comprising:

(a) a body of semiconductor material having opposed substantially flat parallel top and bottom surfaces with an edge portion extending between said top and bottom surfaces, said body of semiconductor material including at least two regions of opposite conductivity type respectively extending to said substantially flat top and bottom surfaces, with the interface of said at least two regions formming a PN junction therebetween, said PN junction extending across said body of semiconductor material and terminating at said edge portions;

(b) first and second electrodes respectively affixed to said top and bottom surfaces of said body of semiconductor material; and

(c) a first ring-shaped member encircling said body of semiconductor material and spaced therefrom by a ring-shaped glass member, said ring-shaped glass member having an inner surface which is fused to said edge portion of said body of semiconductor material.

4,161,747

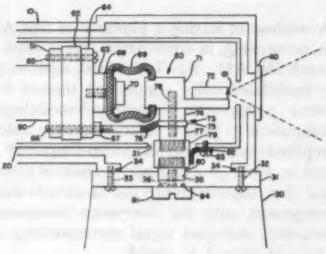
SHOCK ISOLATOR FOR OPERATING A DIODE LASER ON A CLOSED-CYCLE REFRIGERATOR

Robert A. Frosh, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Donald E. Jennings, Berwyn Heights, Md.

Filed Feb. 24, 1978, Ser. No. 880,838

Int. Cl.² H01L *25/04, 23/02, 23/42*

U.S. Cl. 357—82 **10 Claims**



1. Apparatus for maintaining a component at a substantially constant temperature and substantially isolated from vibration in a closed-cycle refrigerator, comprising:

housing means;

radiation shield means within said housing means for reducing radiaton heat from said housing means;

thermal damper means surrounded by said radiation shield means and coupled to a cold tip of said refrigerator; and

means for mounting said component within said radiation shield means, including;

thermal contact means spaced from said thermal damper means for mounting said component thereon,

flexible and thermally conductive strap means coupled between said thermal contact means and said thermal damper means for isolating said component from vibrations of said refrigerator and for thermally connecting said component to said cold tip,

first thermal insolator means connected to said thermal contact means for thermally insolating said component,

thermal conduction means connected to said first thermal insolator means and flexibly and thermally coupled to said thermal damper means for isolating said component from vibrations of said refrigerator and for maintaining said thermal conduction means at substantially said cold tip temperature,

second thermal insulator means connected to said thermal conduction means for thermally insulating said thermal conduction means,

another thermal conduction means connected to said second insulator means and flexibly and thermally coupled to said radiation shield means for isolating said component from vibrations of said radiation shield means and for maintaining said another thermal conduction means at substantially said radiation shield temperature, and

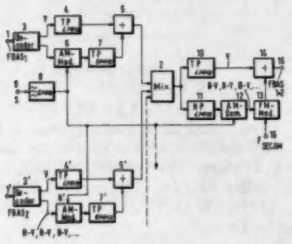
third thermal insulator means connected to said another thermal conduction means for thermally insulating said another thermal conduction means.

4,161,748

MIXING OF SECAM COLOR-T.V. SIGNALS

Bodo Heyl, Weiterstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 22, 1977, Ser. No. 863,303
Int. Cl.[2] H04N 9/535
U.S. Cl. 358—22 **13 Claims**



1. A method of mixing a plurality of SECAM color-T.V. signals, comprising, in combination, these steps:

for each SECAM color-T.V. signal, separating the frequency-modulated color component thereof from the luminance component, frequency-demodulating the color component to yield a video-frequency color component, amplitude-modulating the video-frequency color component to yield an amplitude-modulated color component, and then superimposing the amplitude-modulated color component onto the luminance component to form a frequency-multiplex signal corresponding to the original SECAM color-T.V. signal;

mixing these frequency-multiplex signals using a single mixing channel to yield a frequency-multiplex mix signal which is comprised of a luminance mix component and a color mix component;

separating the color mix component from the luminance mix component on the basis of frequency;

amplitude-demodulating the color mix component to yield a video-frequency mix of the color components of the original SECAM color-T.V. signals;

frequency-modulating the video-frequency color-component mix to yield a frequency-modulated mixed color component for a SECAM color-T.V. signal; and

superimposing the frequency-modulated mixed color component onto the luminance mix component to yield a SECAM color-T.V. signal which constitutes a mix of the original SECAM color-T.V. signals.

4,161,749

PRINTER FOR PRODUCING PRINT OF AN ELECTRONICALLY RECORDED IMAGE

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 30, 1978, Ser. No. 891,704
Int. Cl.[2] H04N 1/46, 1/46; G01D 9/28
U.S. Cl. 358—75 **11 Claims**

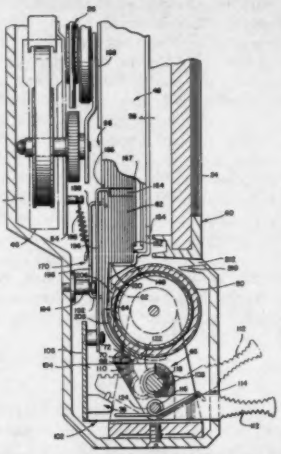
1. A printer for use with electronic image recording apparatus for providing a color print of an electronically recorded image of a scene on an image receiving sheet, the apparatus being of the type including means for providing a plurality of distinct electronic image signals that collectively represent a color record of an optical image of the scene in electronic data form and individually represent different color components of the optical image, the apparatus also including means for holding a plurality of image receiving sheets and a transfer sheet including thereon a number of sequentially arranged sets of a plurality of adjacent parallel stripes of different colored printing mediums for selective transfer to an image receiving sheet, in accordance with a corresponding electronic image signal, to provide a color print of the recorded image thereon, said printer comprising:

a frame;

a cylindrical drum having an axis and being mounted on said frame for rotation about the axis, said drum also including a support surface on which an image receiving sheet is adapted to be located for support and rotation with said drum and means for releasably receiving and securing one end of an image receiving sheet to said drum such that the image receiving sheet is wrapped onto said support surface in response to an initial revolution of said drum;

means being operative for advancing an image receiving sheet relative to the apparatus holding means such that one end thereof is brought into operative engagement with said receiving and securing means on said drum and for advancing the transfer sheet relative to the apparatus holding means to present a set of stripes of the different colored printing mediums at a fixed position adjacent said support surface of said drum with the stripes extending along the length of said drum in parallel relation to the axis and in proximate facing relation to an image receiving sheet wrapped on said support surface in response to an initial revolution of said drum;

a printing head including a plurality of printing transducers mounted thereon, each of said printing transducers being



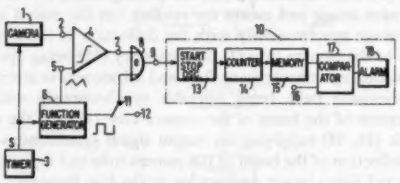
adapted to have a different one of the plurality of distinct electronic image signals applied thereto for converting the signal into a printing signal in a form of energy which when applied to a corresponding one of the different colored printing medium stripes is effective to cause the selective transfer of the colored printing medium from the one stripe to the image receiving sheet on said drum support surface;

means for mounting said printing head on said frame for linear movement along the length of said drum in a direction parallel to the drum axis between first and second positions such that each of said printing transducers is located in operative alignment with a corresponding one of the plurality of colored printing medium stripes located at said fixed position so as to track along the corresponding stripe as said printing head is advanced from said first position to said second position; and

drive means for rotatably driving said drum and simultaneously linearly driving said printing head from said first position to said second position in coordinated relation with the rotation of said drum while the plurality of distinct electronic image signals are applied simultaneously to corresponding ones of said plurality of printing transducers to effect the selective transfer of the different colored mediums to the image receiving sheet, wrapped

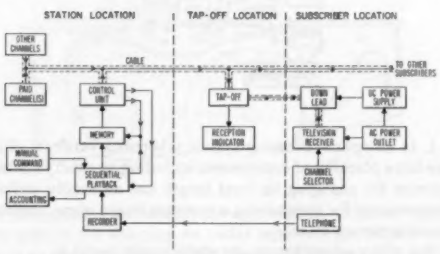
onto said support surface during the initial revolution of said drum, to provide a color print of the recorded image on the image receiving sheet.

4,161,750
VIDEO ALARM SYSTEMS
Gerhard R. Kamin, Traisa, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Mar. 10, 1978, Ser. No. 885,455
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1977, 2710883
Int. Cl.[2] H04N 7/18
U.S. Cl. 358—105 **10 Claims**



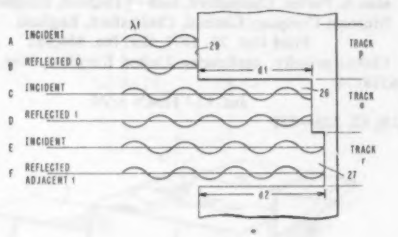
1. An alarm system of the kind wherein an analog video signal produced by a television camera is discriminated to detect a movement or change in the field of view monitored by the television camera, the system comprising means for generating a threshold-value signal, means for converting the video signal provided by the camera into a binary signal whose value depends upon whether or not the level of the threshold-value signal is exceeded by the video signal, and means for evaluating the binary signal according to a predetermined criterion to determine whether or not to raise an alarm, wherein the threshold-value signal is an alternating signal whose frequency is related in predetermined manner to the horizontal frequency of the video signal, and whose level swings at least between the white and black values of the video signal at least once during each line period of the latter.

4,161,751
HIGH-SECURITY CABLE TELEVISION ACCESS SYSTEM
Clarence S. Ost, 7905 Bayshore Dr., Margate City, N.J. 08402
Filed May 19, 1977, Ser. No. 798,409
Int. Cl.[2] H04N 7/16
U.S. Cl. 358—114 **8 Claims**



1. Method of providing, to requesting cable television subscribers, access to requested program signals transmitted over the cable and via interconnections including tap offs and down leads to the subscribers' television receivers, comprising generating a string of clocking pulses corresponding to serial numbering of all the subscribers, combining program command pulses with the clocking pulses corresponding to the respective requesting subscribers in the clocking string and thereby producing a program command signal string, wherein the string of clocking pulses is generated by providing a square wave of certain repetition frequency, and the program command signal string is generated by gating a narrower square wave thereto at the time of each requesting subscriber's clocking pulse and combining the gated portion thereof with the string of clocking pulses, transmitting the program command signal string via the cable to each of the respective requesting subscribers' tap offs, and at each requesting subscriber's tap off separating the command pulses from the clocking pulse string, and utilizing the requesting subscriber's command pulse to gate the requested program signals to that television receiver.

4,161,752
HIGH DENSITY VIDEO DISK HAVING TWO PIT DEPTHS
Albert R. Basilico, Hyde Park, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 28, 1977, Ser. No. 810,702
Int. Cl.[2] H04N 5/76; G11B 23/18, 7/24
U.S. Cl. 358—128 **6 Claims**



1. A video disk of the type that is optically readable according to interference or the absence of interference occuring in light from a point being read on a track of the record when the record is illuminated with light of an appropriate wavelength, said disk comprising,

first and second sets of track revolutions located on the disk with each track revolution being separated from track revolutions of the same set by a single track revolution of the other set,

pits of a depth designated d_1 along track revolutions of the first set for producing interference in light of a wavelength designated lambda$_1$ but not in light of a wavelength designated lambda$_2$,

pits of a depth designated d_2 along track revolutions of the second set for producing interference in light of wavelength lambda$_2$ but not in light of wavelength lambda$_1$,

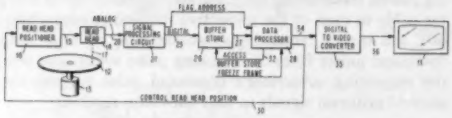
whereby a read operation on track revolutions of the first set with light of wavelength lambda$_1$ and on track revolutions of the second set with light of wavelength lambda$_2$ is independent of the data content of an adjacent track revolution.

4,161,753
VIDEO RECORDING DISK WITH INTERLACING OF DATA FOR FRAMES ON THE SAME TRACK
Jack H. Bailey, Millbrook, and Gerald H. Ottaway, Pleasant Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 8, 1977, Ser. No. 814,017
Int. Cl.[2] H04N 5/76
U.S. Cl. 358—128 **7 Claims**

1. A video recording disk of the type having a succession of track revolutions, comprising,

a recording disk, and a plurality of frames representing a sequence to be presented to a television set recorded on each of said succession of track revolutions, said frames each being divided into successive data units each comprising a predetermined number of horizontal lines of a

television frame and each of said data units of the same frame being spaced apart in sequence substantially equally around the track revolution and interlaced with data units



of other frames of the same track revolution, each of said data units having a header containing an address identifying the sequence of the data unit within a frame and identifying the frame within a sequence of frames.

4,161,754

TELEVISION CAMERA USABLE AS STUDIO OR PORTABLE UNIT

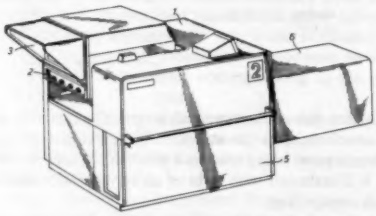
Stanley J. Leeson, Wickham Bishops, Near Witham, and Norman A. Porter, Chelmsford, both of England, assignors to The Marconi Company Limited, Chelmsford, England

Filed Oct. 21, 1977, Ser. No. 844,182

Claims priority, application United Kingdom, Nov. 6, 1976, 46278/76

Int. Cl.[2] H04N *5/26*

U.S. Cl. 358—185 **5 Claims**



1. A television camera of the studio or outside broadcast type comprising a television camera tube and associated control and processing circuitry and a housing therefor and wherein said television camera tube is provided in a separable unit which may be removed from said housing and utilised, with circuitry remaining within said housing, as a portable camera.

4,161,755

TELEVISION PICK-UP SYSTEM

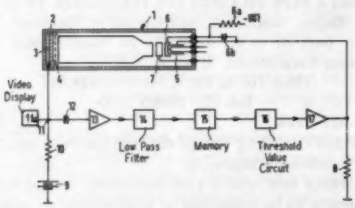
Joerg Haendle, Erlangen; Heinz Horbaschek, Frauenaurach, and Hartmut Sklebitz, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 19, 1978, Ser. No. 870,754

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1977, 2703836

Int. Cl.[2] H04N *5/197*

U.S. Cl. 358—219 **3 Claims**



1. An image pick-up system comprising a television camera having a television camera tube including a cathode, a grid, and a signal plate having a photosensitive layer with a free surface, said camera tube being operable for producing an electron beam, and for deflecting and focusing the electron beam onto the signal plate, comprising means for adjusting the cathode potential of the television camera tube, and comprising an installation for processing the video signal tapped off from the signal plate, and a circuit arrangement comprising a memory (**15**) and a low pass filter (**14**) connected in series to form a series circuit connected to the signal plate (**3**), and the output of the circuit arrangement (**14, 15**) being connected with the means (**17**) for adjusting the cathode potential of the television camera tube (**1**) such that the grid and cathode potentials are more positive the brighter the image location corresponding to the respective output signal of the circuit arrangement (**14, 15**), the memory (**15**) comprising means for storing a television image and means for reading out the stored television image synchronously with the deflection of the electron beam of the camera tube (**1**), said memory (**15**) being operable for picking up one television field and subsequent to storage of the television field, being operable synchronously with the movement of the beam of the camera tube (**1**) with the series circuit (**14, 15**) supplying an output signal synchronous with the deflection of the beam of the camera tube and representing a blurred video image conforming to the low frequency components of the video signal tapped off from the signal plate.

4,161,756

CONTROL SYSTEM FOR VARIFOCAL OBJECTIVE

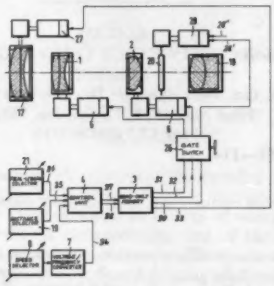
Otto Thomas, Bad Kreuznach, Fed. Rep. of Germany, assignor to Jos. Schneider & Co. Optische Werke, Bad Kreuznach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 778,933, Mar. 18, 1977, abandoned. This application May 26, 1977, Ser. No. 801,017

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1976, 2611639

Int. Cl.[2] G02B *7/11, 15/14*

U.S. Cl. 358—225 **10 Claims**



1. In an optical zooming system wherein a varifocal objective has a plurality of components including an axially shiftable variator for changing its focal length and an axially shiftable compensator for maintaining a constant image plane, the combination therewith of:

first drive means for axially shifting said variator;

second drive means for axially shifting said compensator;

memory means storing correlated positional data for said variator and said compensator;

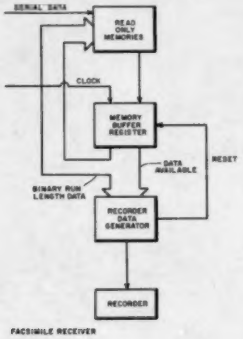
a source of zooming signals; and

control means connected to said memory means and to said source for concurrently reading out respective sequences of said correlated positional data to said first and second drive means in response to said zooming signals whereby said variator and said compensator are axially shifted between different positions in a zoom range.

4,161,757
FACSIMILE SYSTEM

David R. Spencer, Melville, N.Y., and Larry K. Baxter, Lexington, Mass., assignors to Litton Systems, Inc., Melville, N.Y.

Filed Jun. 1, 1977, Ser. No. 802,344
Int. Cl.[2] H04L *3/00*; H04N *1/00*
U.S. Cl. 358—261 4 Claims



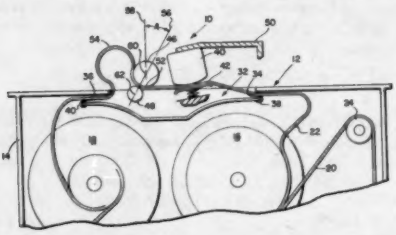
2. A system for decoding a comma free code, such as a Huffman code, comprising:

read only memory means for receiving serial data to partially address the read only memory with the incoming data bit and a memory buffer register for supplying said read only memory with a vectored address from said memory to complete the address of the read only memory, said vectored address having been supplied to the memory buffer register from the read only memory when the previous data bit was received, said vectored address comprising the decoded loop.

4,161,758
LOOP FORMING AUDIO DRIVE

William R. Wray, Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 25, 1978, Ser. No. 899,864
Int. Cl.[2] G03B *23/12, 31/02*
U.S. Cl. 360—90 3 Claims

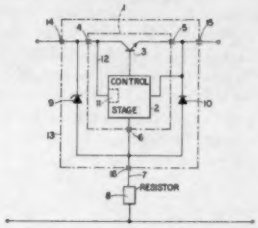


1. A tape drive mechanism having a capstan and pinch roller arrangement for drawing an audio tape in a given direction across an audio transducer and then into a free loop in a audio-visual system, the system including means for retarding the feeding of the tape after it advances from the capstan, the capstan being located in a downstream relation to the transducer, as viewed in the given direction of tape advancement, and arranged with respect to the transducer such that the tape lies in a given plane as it approaches the capstan, the improvement wherein the pinch roller is mounted in a downstream relation to the initial point of tangency of the tape with the capstan so that the tape is carried partially around the capstan and thereby displaced from the given plane as it emerges from contact with the roller and capstan to thereby form a loop in the emerging tape portion the pinch roller being mounted in relation to the capstan so that a plane passed through the center of said capstan and the initial point of tangency between the given tape plane and the capstan is at an angle greater that 10 degrees to a plane passed through the center of the capstan and the center of the pinch roller, and thereby maintain said loop in the emerging tape portion throughout operation of said tape drive mechanism.

4,161,759
PROTECTION CIRCUIT FOR A VOLTAGE REGULATOR

Manfred Stein, Eschborn, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 5, 1977, Ser. No. 839,634
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1977, 2715330
Int. Cl.[2] H02H *9/04*
U.S. Cl. 361—18 7 Claims



1. A protection circuit for a voltage regulator in integrated construction, particularly for motor vehicles, comprising

a voltage regulator having a ground connection line, an input and an output,

a resistor connected in the ground connection line of said voltage regulator, and

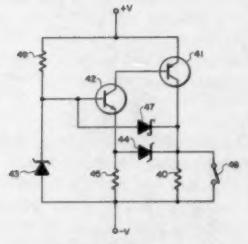
a diode path connected between a voltage regulator sided end of said resistor and said input of the voltage regulator,

whereby said resistor having such a valve that the potential difference occurring on said resistor is limited to a very small value in comparison to the output voltage.

4,161,760
SHORT CIRCUIT PROTECTION OF REGULATED POWER SUPPLIES

William R. Valentine, Andover, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 22, 1978, Ser. No. 907,648
Int. Cl.[2] H02H *3/24*
U.S. Cl. 361—18 6 Claims



1. An overload protection circuit for a voltage regulator connected between a power source and a load;

wherein the voltage regulator comprises a series pass ampli-

fying device having a control electrode, an error amplifier having an output terminal and input terminal means comprising at least first and second terminals, the error amplifier having at least one error amplifying device with an input circuit coupled to the first terminal, sensing means coupled to the load to provide a sense signal which is a function of the output voltage across the load; with the series pass amplifying device connected in series between the power source and the load, the sensing means coupled to the input terminal means, and the output terminal coupled to the control electrode, so that the sense signal amplified by the error amplifier controls the current through the series pass amplifying device to maintain the load voltage within a small predetermined range under normal conditions;

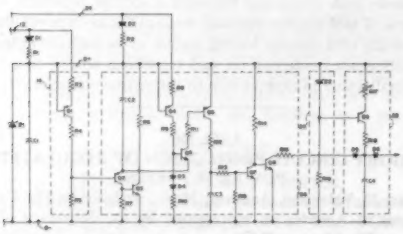
the improvement wherein said overload protection circuit comprises a diode connected between said first terminal and one side of the load, the diode having a forward voltage drop which is significantly lower than the minimum operating internal voltage drop of said input circuit of the error amplifier, the diode being reverse biased for the normal range of load voltage, the diode being forward biased in response to a short circuit of the load which causes a low voltage condition between the first and second terminals to cut off the sense amplifier which in turn produces a signal condition at the control electrode to cut off the series pass amplifying device.

4,161,761

PROPORTIONAL GROUND CURRENT RELAY

Richard J. Moran, Milwaukee, Wis., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Sep. 6, 1977, Ser. No. 830,653
Int. Cl.[2] H02H *3/08*
U.S. Cl. 361—94 **17 Claims**



1. A median phase current detection circuit for a three phase alternating electric power system, which comprises:

power supply means, having a positive terminal and a negative terminal, for supplying a constant direct voltage between said positive and negative terminals;

phase current sensing means, which is coupled to the three phase power system and includes a positive output and a negative output, for producing between its two outputs a direct voltage first signal which is proportional to the instantaneous sum of a single polarity portion of the phase and ground currents flowing in said power system; and

reference signal means, connected to receive said constant direct voltage supplied by said power supply means and said first signal produced by said phase current sensing means, for storing a direct voltage reference signal for at least a half cycle, which follows and approximates in magnitude successive minimum, instantaneous magnitudes of said first signal occurring at least once every half cycle;

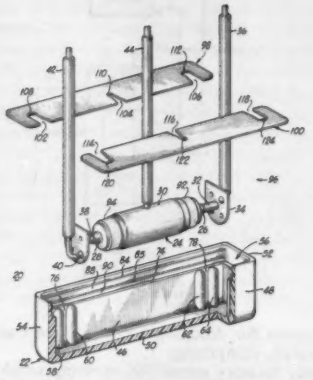
whereby said reference signal is proportional to the median phase current of the three phase power system.

4,161,762

GAS TUBE ARRESTER PROTECTOR AND METHOD OF ASSEMBLING THE PROTECTOR

Eric A. Scheithauer, Chicago, Ill., assignor to Cook Electric Company, Morton Grove, Ill.

Continuation-in-part of Ser. No. 637,713, Dec. 4, 1975, Pat. No. 4,051,546. This application Sep. 21, 1977, Ser. No. 835,411
Int. Cl.[2] H02H *3/22*
U.S. Cl. 361—124 **19 Claims**



1. An overvoltage arrester protector for protecting telephone lines from high voltage and surge currents comprising:

a generally hollow elongated housing having one side substantially open for access into said housing and having retaining means on the inside walls of said housing;

a gas tube overvoltage arrester having at least first and second electrodes;

lead means to be coupled to said telephone lines;

fusible means coupled to each of said first and second electrodes;

contact means attached to said fusible means and said lead means and disposed in said retaining means such that said gas tube overvoltage arrester is positioned within said housing; and

spacer means having slots therein to receive said lead means, said spacer means being positioned through the open side of said housing to further retain said gas tube overvoltage arrester in said housing and to substantially close said open side of said housing.

4,161,763

COMPACT VOLTAGE SURGE ARRESTER DEVICE

Earl W. Stetson, Pittsfield, Mass., assignor to General Electric Company, New York, N.Y.

Filed Mar. 27, 1978, Ser. No. 890,254
Int. Cl.[2] H02H *9/06*
U.S. Cl. 361—128 **1 Claim**

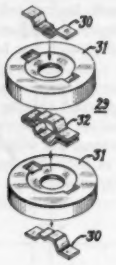
1. A compact surge arrester comprising in combination:

a single electrode having a flat projection surface thereon for defining an extended arcing surface and a pair of flat contact surfaces thereon, one of said contact surfaces including high-electrical resistive means for limiting current flow to said one surface;

a double electrode structure having a first pair of opposing flat contact surfaces on one side and a second pair of flat opposing contact surfaces on another side thereof, a pair of flat projected surfaces for defining arcing surfaces, said first pair of contact surfaces being electrically coupled together;

a disc of electrically insulating material separating said single electrode structure and said double electrode structure and providing arc quenching means therebetween said electrodes; and

a plurality of zinc oxide varistors of the type consisting of a zinc oxide disc having metal electrodes at opposing ends and a ceramic collar around the periphery, wherein one of



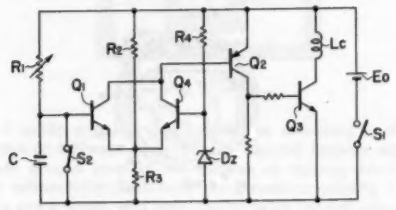
the gap electrodes is electrically coupled with line and one of the zinc oxide electrodes is electrically coupled with ground.

4,161,764

EXPOSURE CONTROLLING CIRCUIT FOR ELECTRIC SHUTTERS

Yasuo Ishiguro; Kenji Wakazono, and Toshihisa Saito, all of Tokyo, Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed May 8, 1978, Ser. No. 903,401
Claims priority, application Japan, May 10, 1977, 52-52584
Int. Cl.² G03B *7/00, 9/58*
U.S. Cl. 361—187 **3 Claims**



1. An exposure controlling circuit for electric shutters comprising a current source, a current source switch connected to said current source, a first switching means connected to said current source through said current source switch, a first coil connected to said current source through said current source switch and first switching means to control the shutter closing operation, and a voltage drop detecting circuit connected to said first switching means and capable of detecting the voltage drop of said current source, said first switching means being operated by a signal issued from said voltage drop detecting circuit to energize said first coil with said current source and to thereby close the shutter when the voltage of said current source drops to be below a predetermined value while the shutter is opened.

4,161,765

POWDER MATERIAL PROCESSING APPARATUS

Tsutomu Itoh, Tokyo; Munekazu Sakurai, Kitamoto; Masahiro Yamamoto, Chiba, and Yasunari Okamoto, Tokyo, all of Japan, assignors to Onoda Cement Co., Ltd., Onoda, Japan

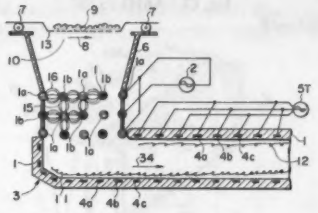
Filed Jan. 4, 1977, Ser. No. 756,910
Int. Cl.² H05B *5/02*
U.S. Cl. 361—226 **13 Claims**

1. A powder material processing apparatus comprising:

a charging zone defined by at least one wall including a passageway adjacent thereto;

an array of elongated conductors extending in parallel relationship to and spaced from one another, said conductors extending transversely with respect to said passageway;

an A.C. power supply coupled to said electrodes with alter-



nate electrodes coupled to opposite polarity terminals of said A.C. power supply to apply an A.C. voltage to said conductors of a magnitude to apply a bi-polar charge to powder by generating a silent A.C. discharge between said conductors; and

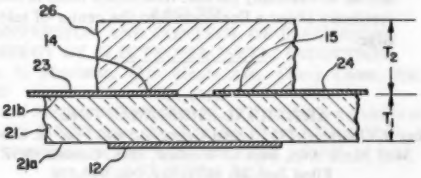
means for passing powder material through the region where said silent discharge is generated.

4,161,766

LAMINATED CAPACITIVE TOUCH-PAD

Donald E. Castleberry, Schenectady, and Wesley K. Waldron, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 23, 1977, Ser. No. 799,298
Int. Cl.² H01G *7/00*
U.S. Cl. 361—280 **9 Claims**



1. A capacitive touch-pad comprising:

a first layer of dielectric material having first and second surfaces, said first surface being outwardly facing and exposed to an external environment;

a first electrode fabricated upon said first surface to be exposed to said external environment and responsive to contact with a human body member;

a pair of spatially separated second and third electrodes fabricated upon said second surface substantially within the boundaries of said first electrode; and

a second layer of rigid dielectric material laminated to said second surface in abutment with said second and third electrodes;

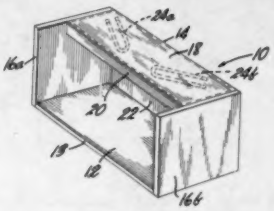
said first layer having a thickness predeterminately selected to cause an electrical capacitance between each of said second and third electrodes and said first electrode to be greater than the parasitic capacitance between said first and second electrodes.

4,161,767

TASK LIGHTING SYSTEM WITH ANGULARLY-DISPLACED FLUORESCENT TUBES

Roger Benasutti, St. Paul, and Thomas A. Koenig, Stillwater, both of Minn., assignors to Conwed Corporation, St. Paul, Minn.

Filed Oct. 3, 1977, Ser. No. 838,764
Int. Cl.[2] A61G 13/00
U.S. Cl. 362—33 **3 Claims**



1. A task lighting system for illuminating a work surface comprising:

(a) a substantially horizontal hood having a front edge;

(b) said hood having a width of from about 60 to about 90 inches and depth of from about 15 to about 24 inches;

(c) a front lip on the front edge of said hood of from about 4 to about 6 inches;

(d) means for holding said hood from about 16 to about 26 inches above said work surface;

(e) first and second parallel fluorescent tubes in the left half of said hood behind said lip;

(f) the axes of said first and second substantially parallel fluorescent tubes being substantially in a horizontal plane and making an angle of from about 9 to about 80 degrees with respect to said front edge;

(g) third and fourth substantially parallel fluorescent tubes in the right half of said hood behind said lip; and

(h) the axes of said third and fourth substantially parallel fluorescent tubes being substantially in a horizontal plane and making the same angle between 9 and 80 degrees with respect to said front edge as the axes of said first and second substantially parallel fluorescent tubes in left-right symmetry about a line normal to the center of said front edge.

4,161,768

ARTIFICIAL CHRISTMAS TREE

Ray J. Gauthier, 2931 Lloyd Georg St., and Fred G. Caverzan, 3415 Mark Ave., both of Windsor, Ont., Canada (N9E 2X3)

Filed Jun. 14, 1978, Ser. No. 915,576
Int. Cl.[2] A47G 33/06
U.S. Cl. 362—123 **2 Claims**

1. An artificial Christmas tree which is produced in knock-down components for assembly by the user, comprising in combination a central stalk made of a wooden tube containing therein electrical conductors which are concentric with and run the full length of said central stalk; spaced holes located around the stalk for inserting therein branches of said tree, said holes leading from the surface of the stalk in a downward angle to its center; a plurality of main branches to which are attached secondary branches, made of two intertwined, stiff, and insulated electrical wires, said secondary branches being electrically connected to their main branch by jump wires, and each of the main branches terminating at its top with a cap, and at its stalk insertion end with a plug which makes electrical contact with the said electrical conductors within the stalk; tufts of artifical pine needles covering the said main and secondary branches; spaced, colored, ornamental electric lights attached to said main and secondary branches; a cap on the top of the central stalk provided with a central extension for attaching an ornament thereto; in combination with an electric cord leading from the said conductors within the central stalk and at the

bottom thereof for attaching the tree to a power source; and a pedestal to which the central stalk can be attached.

4,161,769

ILLUMINATED HAND RAIL

Billy N. Elliott, Golden, Colo., assignor to Zimmerman Metals, Inc., Denver, Colo.

Filed Jul. 11, 1977, Ser. No. 814,496
Int. Cl.[2] F21V 33/00, 21/00
U.S. Cl. 362—146 **9 Claims**

1. In an illuminating hand rail arranged to be mounted adjacent a walkway for projecting light downwardly thereon, comprising:

(a) an opaque tube forming said hand rail having an elongated opening of uniform width in the lower portion of the wall thereof, the maximum cross section of said opening defining a reference rectangle of a width and length through which a unitary lighting fixture containing an elongated illuminating bulb may be inserted, said fixture comprising:

(b) an elongated U-shaped housing of uniform cross section having an arcuate bight portion adapted to abut the inner wall of the tube and longitudinal parallel spaced walls of a width substantially that of the width of the rectangle, the outer edges of said parallel spaced walls being arranged to abut the longitudinal edges of the rectangular opening in said tube whereby the interior of said tube is substantially sealed;

(c) an elongated continuous reflector plate secured to the housing along the length thereof forming a first open ended chamber therebetween at one side thereof for receiving electrical wires, and a second chamber at the other side thereof for receiving an illuminating bulb, said second chamber being disposed nearest the outer edges of said parallel spaced walls of said housing,

(d) an illuminating bulb socket secured to the reflector plate

and disposed in said second chamber for supporting the bulb,

(e) a window closing said second chamber along the length thereof, said window being removable from the housing to provide access to the second chamber for replacing the bulb, said window including longitudinal parallel walls adapted to be inserted and closely fit between the parallel walls of the housing to substantially seal the interior of the housing and having an arcuate portion between said parallel walls said arcuate portion forming a continuation of the tube outer surface across the rectangular opening when said housing and window are inserted into said tube, and

(f) removable clip means provided at each end of the window and attached to said tube to permit easy removal of the window from the housing for replacement of said bulb.

4,161,770

GUIDE SIGNAL DEVICES

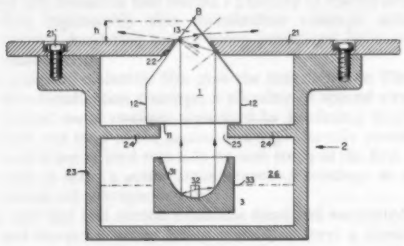
Urs Maurer, Dietlikon, Switzerland, assignor to Erni & Co., Elektroindustrie, Zurich, Switzerland

Filed Sep. 19, 1977, Ser. No. 834,841

Claims priority, application Switzerland, Sep. 17, 1976, 011784/76

Int. Cl.² F21V 7/00

U.S. Cl. 362—309 **10 Claims**



1. A guide signal device suitable for mounting in airport runways or taxiways comprising a covered housing situated beneath ground level of the runway or taxiway having its cover substantially flush with the ground containing a light source and a prism, said light source being located below the prism and a portion of said prism projecting above the cover of said housing, said projecting portion of the prism having a cross-sectional profile of an isosceles triangle which includes two planar surfaces converging together to form an apex of the triangle, a portion of said surfaces projecting above the cover plate of the housing wherein light emerging from the light source is both transmitted through and internally reflected from one of the said planar surfaces, the planes forming an apex angle such that the reflected light from the one surface is internally reflected towards the other surface where the light is transmitted through the prism in a desired direction.

4,161,771

INVERTER RIPPLE REGULATOR

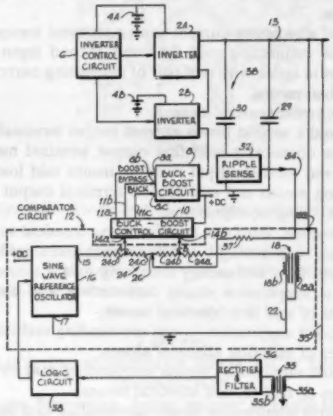
James W. Bates, Palos Verdes Estates, Calif., assignor to Gulton Industries, Inc., Metuchen, N.J.

Filed Jul. 25, 1977, Ser. No. 818,350

Int. Cl.² H02M 1/12

U.S. Cl. 363—43 **17 Claims**

1. A converter circuit for providing a regulated sinusoidal-like output voltage under varying load current conditions from DC, said converter circuit comprising, in combination: DC voltage source means; a source of a reference signal having the desired sinusoidal-like waveform; inverter circuit means energized by said DC voltage source means for providing an output which at least roughly approximates a desired sinusoidal-like output, a buck-boost circuit having a first output condition where the output thereof is a first finite signal of one polarity which is a fraction of the maximum amplitude of said output, a second output condition where the output thereof is a second finite signal of the same amplitude but opposite polarity to said first finite signal, and a third output condition where the output thereof is zero; means for adding the output of said buck-boost circuit to the output of said inverter circuit means to produce an overall combined output; comparator means for comparing



the output of said reference signal source and at least a part of said overall combined output of said inverter circuit and buck-boost circuits which has an amplitude comparable to said reference signal; and control means responsive repeatedly over each half cycle to said comparator means for operating said buck-boost circuit into one of said output conditions for a desired period which brings said overall resultant output toward the instantaneous level of the desired sinusoidal output.

4,161,772

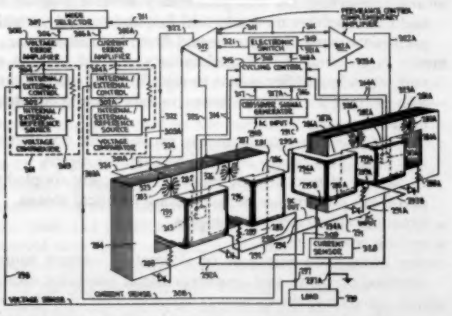
CONVERSION AND CONTROL OF ELECTRICAL ENERGY BY ELECTROMAGNETIC INDUCTION

Nathan A. Moerman, 7310 Maple Ave., Chevy Chase, Md. 20015

Division of Ser. No. 762,896, Jan. 26, 1977, which is a division of Ser. No. 635,007, Nov. 25, 1975, Pat. No. 4,020,440. This application Nov. 7, 1977, Ser. No. 849,379

Int. Cl.² H02M 7/02

U.S. Cl. 363—44 **2 Claims**



1. In an electromagnetic induction means for converting alternating current power into direct current power,

a first and second identical electric power pulse transformer means,

each of said identical means having an input path means, an output path means, a bypass means, an input winding means on said input path means, an output winding means on said output path means, a first electromagnetically coupled variable permeance control means between said input path means and said output path means, a second electromagnetically coupled variable permeance control means between said input path means and said bypass path means,

a pair of alternating current source terminal means,

a means connecting said first and second input winding means in series with said pair of alternating current source terminal means,

a load current sensing means,

a first and a second direct current output terminal means,

a means connecting said first output terminal means, said first and second output winding means said load current sensing means and said second terminal output means in series aiding configuration,

a first, second, third and fourth reverse transient suppression means, each having a winding means and a unidirectional current flow and energy absorbing means,

said first suppression means surrounding said bypass path means of said first identical means,

said second suppression means surrounding said output path means of said first identical means,

said third suppression means surrounding said bypass path means of said second identical means,

said fourth suppression means surrounding said output path means of said second identical means,

a first voltage comparator means having a direct current reference voltage means and an output voltage setting means producing a voltage error output signal,

a voltage feedback means connecting said first voltage comparator means and said first output terminal means,

a second voltage comparator means having a direct current reference voltage means and an output direct current setting means producing a current error output signal,

a current feedback means connecting said current sensing means to said second voltage comparator means,

an operating mode selector means,

means connecting the voltage error signal output of said first voltage comparator means as a first input to said operating mode selector means,

means connecting the current error signal output of said second voltage comparator means as a second input to said operating mode selector means,

a first and a second complementary control amplifier means for alternating a minimum magnetic permeance state and a variable permeance state,

means connecting the output of said operating mode selector means as the first input to both of said amplifier means,

means connecting the complementary control outputs of said first amplifier means to said first and second variable permeance control means in said first identical means,

means connecting the compelmentary control outputs of said second amplifier means to said first and second variable permeance control means in said second identical means,

a first flux density sensing means magnetically coupled to said input path means of said first identical means,

a second flux density sensing means magnetically coupled to said input path means of said second identical means,

a crossover signal generator means,

a cycling control means,

means connecting said pair of alternating current source terminal means to said crossover signal generator means,

means connecting the crossover signal outputs of said crossover signal generator means to said cycling control means,

means connecting the output of said first flux density sensing means as the first input to said cycling control means,

means connecting the output of said second flux density sensing means as the second input to said cycling control means,

an electronic switch means having a first and a second alternating signal output means,

means connecting said first output of said electronic switch means to said first complementary control amplifier means as the second input thereto,

means connecting said second output of said electronic switch means to said second complementary control amplifier means as the second input thereto,

whereby an alternating current input applied to said crossover signal generator produces a crossover pulse to establishing a pulsing frequency control for said cycling control and said electronic switch in conjunction with the alternating output signals from said first and second flux density sensing means,

whereby said operating mode selector provides the amplitude control for said complementary control amplifier means in response to voltage and current error signals received thereby,

whereby said identical electrical power pulse transformer means produce a pulsed direct current output in response to the variation of permeance in said permeance control means, said variation being provided by said complementary amplifier means.

4,161,773

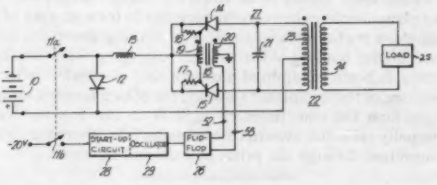
PUSH-PULL INVERTER INCLUDING STARTER CIRCUIT

Bronislaw T. Szpakowski, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jul. 10, 1978, Ser. No. 922,973

Int. Cl.[2] H02M 7/515

U.S. Cl. 363—49 **10 Claims**



1. An inverter for transforming direct current from a source of direct current into alternating current, said inverter including a transformer having a first winding for receiving a train of rectangular pulses from a switching means whereby said switching means selectively interrupts a flow of current from said source of direct current to said first winding, said transformer having a second winding for connection to an AC load, said inverter characterized by a control circuit means for controlling the operation of said switching means such that, upon start-up of said inverter, the first pulse applied to said first winding has one half the duration of the subsequent pulses in said train of rectangular pulses, and the subsequent pulses in said train, after said first pulse, are all of the same duration.

4,161,774
REGENERABLE ELECTRIC WOUND CAPACITOR WHICH IS DIVIDED INTO A PLURALITY OF SUB-CAPACITANCES

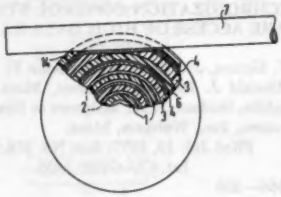
Reinhard Behn, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 12, 1977, Ser. No. 832,344

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1976, 2641182

Int. Cl.[2] H02M *3/18*

U.S. Cl. 363—59 **12 Claims**



1. An electrical regenerable wound capacitor which is divided into a plurality of series connected sub-capacitances for use in voltage multiplier cascades, comprising:

(a) a first dielectric film having a plurality of spaced strips of first regenerably thin metalization coatings attached thereto, insulating means being positioned between the spaced strips;

(b) a second dielectric film over the first dielectric film and thin metalization coatings, a plurality of spaced strips of second metal coatings separated by insulating means, at least one strip of the second coatings laterally positioned to overlap at least two side-by-side strips of the first coatings to form a series arrangement of coatings as series connected subcapacitances;

(c) said first and second dielectric films and associated first and second coatings being wound to form a capacitive region of the wound capacitor;

(d) at least two outermost turns of the second dielectric film and second coatings wherein said second coating has a relatively higher surface conductivity than that of said first regenerably thin metalization coatings, no first coatings being arranged between the two outermost turns of the second coatings and dielectric film;

(e) at least one outer connection wire fused into at least one of said outermost turns of second dielectric and second coatings of high surface conductivity, said connection wire lying external to the capacitive region and being positioned to project from a periphery between end sidewalls of the wound capacitor; and

(f) said first regenerable thin coatings not being electrically connected to any outer connection wires.

4,161,775
RECTIFIER UNIT FOR PROVISION IN AN ALTERNATOR

Herbert Franz, Stuttgart; Reinhold Wamsler, Schwieberdingen, and Georg Binder, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 13, 1977, Ser. No. 841,708

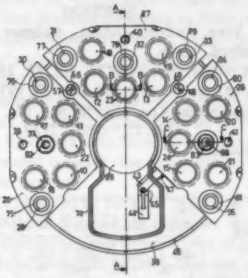
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1976, 2649418

Int. Cl.[2] H02M *1/00*; H02K *11/00*

U.S. Cl. 363—145 **14 Claims**

1. Rectifier unit for a 3-phase alternator having three formed metal cooling plates each connected to a different one of the alternating current terminals of said alternator, on which plates diodes are mounted and to which the diodes mounted thereon have one of their terminals connected, and also an insulating plate on which conductor paths for connecting up the diodes are provided and including the improvement, according to the invention, wherein:

there are thermally and electrically connected to each said cooling plate, one exciter field circuit diode, at least one



positive side diode and at least one negative side diode, and

each of said cooling plates (**26,27,28**) has the form of a circular sector disk with a claw-like extension at right angles thereto at its outer edge.

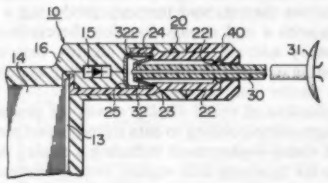
4,161,776
FLYBACK TRANSFORMER WITH HIGH TENSION CONNECTOR

Shoji Onoue, Musashino, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1977, Ser. No. 815,456

Int. Cl.[2] H02M *7/00*

U.S. Cl. 363—146 **5 Claims**



1. A flyback transformer for a television receiver including a core, a coil assembly mounted on the core and including a low tension and a high tension coil and also including a rectifier connected with the high tension coil for rectifying a high tension output therefrom, the coil assembly being contained in an enclosure of an electrically insulating material together with the rectifier, a high tension lead wire having an insulating coating, and fastener means for providing an electrical connection between the high tension lead wire and the rectifier; characterized in that the fastener means comprises a tubular connector body formed of an electrically insulating material and having one end of a greater inner diameter than that of the other end, with a step between the both ends, the connector body being supported by the enclosure and having said other end opening outside the enclosure said other end being formed with a plurality of substantially axially extending slits with a plurality of inwardly extending lips at the ends thereof, a conductive cap fitted into the space at said one end of the connector body and positioned against the step and electrically connected with the rectifier, and a fastener of an electrically conductive material firmly mounted on and electrically connected with the high tension lead wire and adapted to engage the conductive cap and to be locked by the step as the end of the high tension lead wire is inserted into the connector body said fastener means including a resilient insulating cap fitted on the end of the high tension lead wire and which is adapted to be

fitted over said other end of the connector body to resiliently urge the lips inwardly to firmly grip the high tension lead wire.

4,161,777

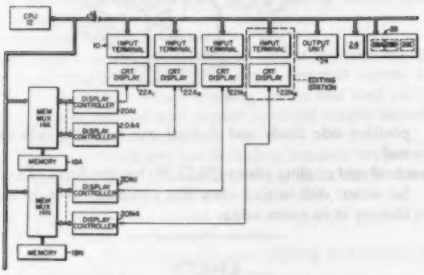
VISUAL OUTPUT MEANS FOR A DATA PROCESSING SYSTEM

Charles W. Ying, Andover, Mass., assignor to Atex, Incorporated, Bedford, Mass.

Division of Ser. No. 710,220, Jul. 30, 1976, which is a continuation of Ser. No. 508,358, Sep. 23, 1974, abandoned. This application Apr. 3, 1978, Ser. No. 892,979

Int. Cl.[2] G06F *3/14*

U.S. Cl. 364—200 **6 Claims**



1. Visual display assembly means for use with a digital data processing system that includes a bus and means for a generating onto the bus system address and system transfer control signals to produce a transfer of system data signals over the bus, said display assembly means comprising:

A. a memory for storing data signals at identified storage locations therein, said memory producing a transfer of data with a said storage location therein in response to memory address signals that identify that said storage location uniquely in the data processing system and memory tranfer control signals,

B. a plurality of visual display means for producing visual images corresponding to data stored in said memory, each said visual display mean including a display data connection for receiving data signals, display address means for generating display address signals and display transfer means for generating display transfer control signals thereby to initiate a data transfer with said corresponding visual display means,

C. multiplexing means connected to said memory and said plurality of visual display means, said multiplexing means including:

i. bus connection means connectible to the bus for coupling the system address signals, the system transfer control signals and the system data signals between the bus and said multiplexing means,

ii. priority arbitration means connected to said bus connection means and to said display transfer means in each said visual display means for responding to the transfer control signals from said connection means and each said visual display means thereby to designate whether a transfer of data signals with said memory will occur through the said bus connection means or with one of said visual display means,

iii. transfer control means connected to said bus connection means and to said display transfer control means and responsive to the system address and system transfer control signals from said bus connection means and to the display transfer control signals from said visual display means for generating the memory transfer control signals that initiate a data transfer operation by said memory, iv. address path switching means connected to said memory, said bus connection means, said display address means and said priority arbitration means and responsive to said priority arbitration means for coupling, to said memory, memory address signals corresponding to the selected ones of the system signals and the display address signals, and

v. data path switching means connected to said bus connection means and to said display data connections for each of said visual display means for transferring data signals between said memory and the one of said visual display means and said bus connection means that is selected by said priority arbitration means.

4,161,778

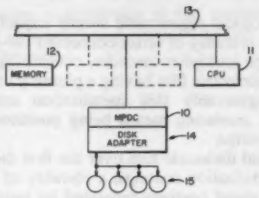
SYNCHRONIZATION CONTROL SYSTEM FOR FIRMWARE ACCESS OF HIGH DATA RATE TRANSFER BUS

Edward F. Getson, Jr., Lynn, Mass.; John H. Kelley, Nashua, N.H.; Donald J. Rathbun, Andover, Mass., and Albert T. McLaughlin, Hudson, N.H., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Jul. 19, 1977, Ser. No. 816,985

Int. Cl.[2] G06F *3/06*

U.S. Cl. 364—200 **5 Claims**



1. A data transfer control system for signalling the occurrence of a time period during which an asynchronous common communication bus may be accessed by a firmware control system during a data transfer between a main memory and a mass storage device without compromising the data transfer rate or incurring data errors, said bus electrically linking said main memory, said firmware control system, and a mass storage control unit in electrical communication with a disk adapter controlling the operation of said mass storage device, which includes:

(a) memory means in electrical communication with said disk adapter and said control unit for transferring data asynchronously therebetween and indicating both the presence of input data and the occurrence of a filled condition in said memory means;

(b) logic gate means responsive to the indications from said memory means and control signals from said control unit for providing data strobes to synchronize the flow of data between said memory means and said control unit; and

(c) logic timing means in electrical communication with said control unit and said logic gate means for issuing a control signal to said firmware control system indicating the occurrence of said time period.

4,161,779

DYNAMIC PRIORITY SYSTEM FOR CONTROLLING THE ACCESS OF STATIONS TO A SHARED DEVICE

David H. Spencer, Lebanon, and Edward A. Becker, Somerset, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 30, 1977, Ser. No. 855,855

Int. Cl.[2] G06F *3/04*

U.S. Cl. 364—200 **19 Claims**

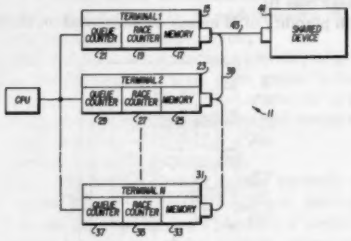
1. A dynamic priority system for controlling the access of a plurality of requesting stations to a shared device serially interconnected to the stations comprising:

access priority storage means within each station for storing a first priority value when its associated station initially

requests access to the shared device and successively incremented priority values whenever another station subsequently requests access to the shared device;

data storage means within each station for storing informational data to be transferred to said shared device;

shared device monitoring means within each station for signaling when the shared device is in a busy state or an accessible state;



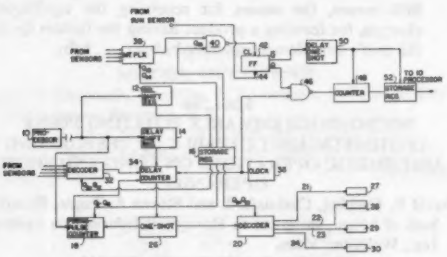
access allocating means within each station receiving the priority value stored in its associated priority storage means in response to a shared device accessible signal from its associated monitoring means for continuously incrementing said received value until the value in one of the access allocating means of one of said requesting stations exceeds a preselected value whereby the requesting station exceeding this value is allocated access to said shared device and the remaining stations are inhibited from accessing said shared device.

4,161,780

SPIN RATE TIMING SYSTEM

Louis R. Rudolph, Annandale, Va., and Woodrow W. Ewen, II, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 23, 1978, Ser. No. 918,256
Int. Cl.[2] G06F *15/20*; B64G *1/20*
U.S. Cl. 364—434 **2 Claims**



1. Apparatus for use in controlling the attitude of a spinning spacecraft, said apparatus receiving serial data words from an external processor and pulse inputs from sensors disposed on the spacecraft and transmitting data to said processor and signals to control thruster jets on said spacecraft, said apparatus comprising:

a select shift register having its input coupled to said processor for receiving a select data word;

a delay shift register having its input coupled to said processor for receiving a delay data word;

a storage register having its data input coupled to the data output of said selected shift register for storing said select data word;

a delay counter having its input coupled to the data output of said delay shift register;

a clock coupled to said delay counter for stepping down the count in said counter;

a first decoder coupled to the data output of said storage register, said first decoder receiving at least two data bits from said storage register to direct a signal received at its input to one of a plurality of outputs, said outputs controlling said thruster jets;

a firing pulse counter coupled to the data output of said storage register, said firing pulse counter receiving a plurality of data bits from said storage register to enter an initial count in said counter, the delay data word loading the data in said counter;

a second decoder coupled to the data output of said storage register, said second decoder receiving at least two data bits from said storage register to select one of a plurality of sensor inputs as the output of said decoder; said output being coupled to said delay counter to load the delay word in said delay shift register into said delay counter; and

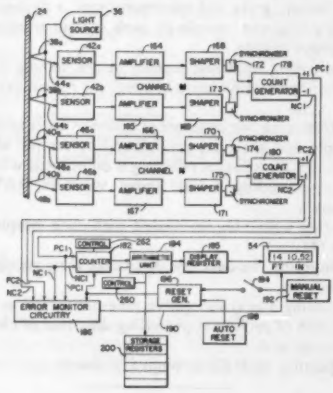
a one-shot multivibrator coupled to said delay counter, said multivibrator being triggered when the count in said delay counter reaches zero, the output of said multivibrator being coupled to said firing-pulse counter to step down the count in said firing-pulse counter and being coupled to the input of said first decoder.

4,161,781

DIGITAL TAPE RULE

William J. Hildebrandt, Simsbury, and Robert F. West, West Simsbury, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Nov. 25, 1977, Ser. No. 854,670
Int. Cl.[2] G06M *1/272*; G01B *3/08*
U.S. Cl. 364—562 **43 Claims**



1. In a measuring device comprising a housing and an elongated coilable tape blade measuring element biased in a coiled condition in said housing with one end fixed to said housing and a free end adapted to be moved toward and away from said housing to traverse a distance to be measured:

(a) a series of optical markings at constant intervals along said blade for indicating the passage of distance when said markings are irradiated and said blade is moved relative to said housing;

(b) photoelectric sensing means carried by said housing and operatively associated with said markings on said blade for providing output signals at constant increments of distance during movement of said blade; and

(c) readout means operatively connected to said sensing

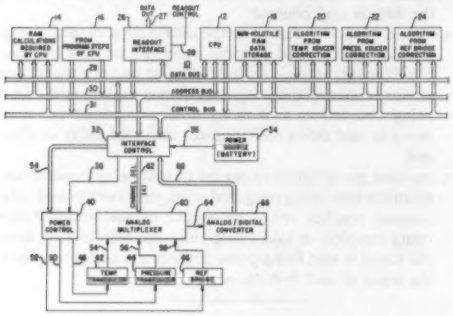
means for converting said signals to an indication of the distance traversed by said blade.

4,161,782

MICROPROCESSOR COMPUTERIZED PRESSURE/TEMPERATURE/TIME DOWN-HOLE RECORDER

Oliver W. McCracken, Pauls Valley, Okla., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 23, 1977, Ser. No. 863,678
Int. Cl.[2] E21B 47/06; G06F 15/20
U.S. Cl. 364—571 **21 Claims**



1. The method of storing data versus time down-hole in a well bore from a self-contained tool comprising temperature and pressure transducers, a pressure transducer reference bridge, a power source, and an associated microprocessor computer; comprising the steps of:

(1) initiating a preselected program-defined initial time-out period,

(2) upon completion of said preselected initial time-out period, initiating via said microprocessor, a time-multiplexed analog read-out sample of each of said transducers and reference bridge,

(3) converting each said analog output sample to a digital format and storing same in a register of said microprocessor,

(4) determining the differential between each instant stored sample and the next preceding like sample and storing those instant samples effecting a differential with absolute value exceeding a least count value in RAM storage means,

(5) storing a time tag associated with each sample stored in step (4),

(6) computing the data rate of change from successive pairs of samples,

(7) adjusting a next successive time-out period as an inverse function of each next preceding data rate of change computation; and

(8) repeating steps (2) through (7), above.

4,161,783

CHARGE-COUPLED MULTIPLYING DIGITAL-TO-ANALOG CONVERTER

Edwin H. Wrench, Jr., San Diego, Calif., and Jerome J. Tiemann, Schenectady, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 3, 1978, Ser. No. 892,580
Int. Cl.[2] G06J 1/00; H03K 13/02
U.S. Cl. 364—606 **1 Claim**

1. A multiplying digital-to-analog converter comprising:

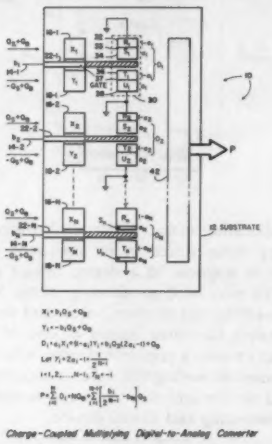
a substrate, capable of being implemented with charge-coupled devices (CCDs) on its surface;

a first plurality of N means, disposed on the surface of the substrate, for receiving a digital word $b_1b_2b_3 \ldots b_N$, where N is the word length, each means receiving only one of the digits b_i, $1 \leqq i \leqq N$;

a second plurality of N means, implemented on the substrate as potential wells X_i, for receiving a positive charge Q_S+Q_B, which results from the addition of a bipolar signal voltage S to a voltage bias B, $B \geqq |S|$;

a third plurality of N means, implemented on the substrate as potential wells Y_i in apposition to the potential wells X_i, for receiving a positive charge $-Q_S+Q_B$, which results from the subtraction of the signal voltage S from the voltage bias B;

a fourth plurality of N means, implemented on the substrate



Charge-Coupled Multiplying Digital-to-Analog Converter

between the potential wells X_i and Y_i, for gating equilibrated charges which are in apposition, equilibration occurring only if the digit b_i equals 0;

a fifth plurality of N pairs of means, implemented upon the substrate and having channel stops diffused into them, for receiving the equilibrated charges, the charge on one portion of each of the N pairs of wells being dumped to ground; and

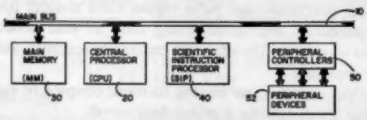
a sixth means implemented on the substrate as a larger potential well, which accepts the undumped charges from the fifth means, the means for receiving the equilibrated charges, for forming a product having the factors Q_S and the two's complement number $b_Nb_{N-1} \ldots b_2b_1$.

4,161,784

MICROPROGRAMMABLE FLOATING POINT ARITHMETIC UNIT CAPABLE OF PERFORMING ARITHMETIC OPERATIONS ON LONG AND SHORT OPERANDS

David E. Cushing, Chelmsford, and Steven A. Tague, Billerica, both of Mass., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Jan. 5, 1978, Ser. No. 867,242
Int. Cl.[2] G06F 7/48, 9/00
U.S. Cl. 364—748 **40 Claims**



1. A microprogrammable arithmetic processing unit for performing an arithmetic operation upon a pair of operands, said processing unit comprising:

a microprogrammed control section including:

a cycled addressable control store including a plurality of storage locations for storing a corresponding number of microinstruction words, each including a control field coded to indicate a physical organizational characteristic of said unit; and,

output register means coupled to said control store for storing a microinstruction word read out during an operative cycle of said control store;

addressing means coupled to control store for applying an address for referencing one of said plurality of storage locations during said operative cycle;

an arithmetic and logic unit including a plurality of groups of multibit microprocessor chips, each group including a predetermined number of said chips connected to operate in tandem, each chip being coupled to said output register means and including:

an arithmetic logic unit section; and,

a multibit addressable random access memory section connected to said arithmetic logic unit section, each said memory section having a plurality of multibit storage locations and a multibit random access memory shift register and multiplexer section coupled to said random access memory section; and

control circuit means coupled to a predetermined one of said chips included within each of said groups, said control circuit means being coupled to said output register and operative in response to each microinstruction word read out from said control store during each operative cycle to selectively interconnect said groups of chips for operation as two independent sections and as a single section in accordance with coding of said control field as required for performing said arithmetic operation upon said pair of operands.

4,161,785

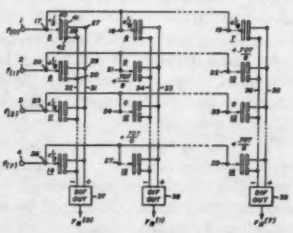
MATRIX MULTIPLIER

Emery P. Gasparek, Camillus, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Nov. 17, 1977, Ser. No. 852,501

Int. Cl.[2] **G06G** *7/19, 7/16;* **H03K** *5/159*

U.S. Cl. 364—827 **7 Claims**



1. A matrix multiplier comprising:

(a) electrical input terminal means for simultaneous application of a plurality (X) of ordered analog input voltage quantities, where

$$\overline{X} = \begin{vmatrix} x_1 \\ x_2 \\ \cdot \\ \cdot \\ x_j \\ \cdot \\ \cdot \\ x_m \end{vmatrix}$$

(b) a plurality of electrical circuit elements arranged in a two dimensional array having rows and columns, each circuit element having:

(1) capacitive storage means whose capacity establishes a weight corresponding to a respective fixed coefficient of a two dimensional matrix (A) of fixed coefficients where

$$A = \begin{vmatrix} a_{11} & a_{12} & \cdots\cdots & a_{1m} \\ a_{21} & a_{22} & & \\ & \cdot & & \\ & \cdot & & \\ & a_{ij} & & \\ & \cdot & & \\ & \cdot & & \\ a_{n1} & & & a_{nm} \end{vmatrix}$$ and

(2) terminal means for applying an input and for deriving an output,

(c) means for interconnecting the terminal means of the circuit elements in each row to said electrical input terminal means for applying a common input quantity (x_j) to each element in said row, each circuit element producing a product ($a_{ij}x_j$) proportional to the weight of the fixed coefficient (a_{ij}) of said electrical circuit element and to the applied analog input quantity (x_j), said products representing analog quantities of electrical charge,

(d) means for interconnecting the terminal means of said circuit elements in each column for deriving an output (y_i) equal to the sum of products in each column of circuit elements, where

$$y_i = \sum_{j=1}^{m} a_{ij}x_j = a_{i1}x_1 + a_{i2}x_2 + \ldots + a_{ij}x_j + \ldots a_{im}x_m \text{ and}$$

(e) a plurality of output circuit means, each coupled to a respective column interconnecting means for deriving an ordered analog output voltage quantity (Y), where

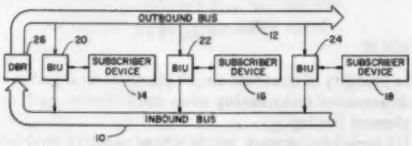
$$\overline{Y} = \begin{vmatrix} y_1 \\ y_2 \\ \cdot \\ \cdot \\ y_i \\ \cdot \\ \cdot \\ y_n \end{vmatrix} = A\overline{X}$$

corresponding to the multiplication of said two dimensional matrix (A) of fixed coefficients by said plurality (X) of ordered analog input quantities.

4,161,786
DIGITAL BUS COMMUNICATIONS SYSTEM

Gregory T. Hopkins, Chelmsford; Ashraf M. Dahod, Reading; Victor A. Demarines, Chelmsford; Norman B. Meisner, Newton Centre, and David G. Willard, Carlisle, all of Mass., assignors to The Mitre Corporation, Bedford, Mass.

Filed Feb. 27, 1978, Ser. No. 881,704
Int. Cl.[2] G06F *3/00*; H04J *3/04*
U.S. Cl. 364—900 **46 Claims**



1. A time division multiple access communications system comprising:

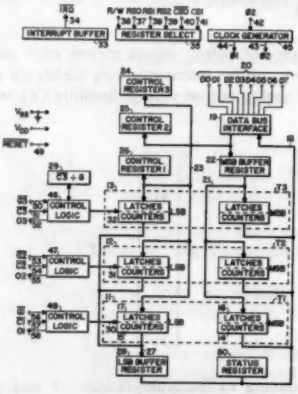
a common signal path and a set of terminals coupled to said path, said set including means for establishing one or more communication links over said path between one or more of said terminals, and means for transferring digital signals between linked terminals in one or more time slots associated with said links, said time slots being in a repetitive framed sequence, each of said terminals having an associated address and including means to identify and receive correspondingly addressed digital signals on said path,

wherein at least one terminal further includes means for transmitting an addressed primary slot allocation signal on said signal path in at least one of said time slots, said primary slot allocation signal being addressed to one or more other terminals and including data representative of the identity of an allocated one or more of said time slots in which said other terminals may transmit addressed signals on said path.

4,161,787
PROGRAMMABLE TIMER MODULE COUPLED TO MICROPROCESSOR SYSTEM

Stanley E. Groves, Round Rock; Gene A. Schriber; Brian M. Spinks, both of Austin, all of Tex.; Richard M. Baker, Phoenix, Ariz.; Thomas C. Daly, Dallas, Tex., and Rodney J. Means, Manassas, Va., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 4, 1977, Ser. No. 848,558
Int. Cl.[2] G06F *9/18*
U.S. Cl. 364—900 **9 Claims**



1. A programmable timer device for use within a digital processing system and coupleable to a data bus of said system and responsive to a clock signal, comprising:

latch means responsive to signals on said data bus for receiving and storing a first binary number from said data bus;

counter means responsive to said clock signal coupled to said latch means and to said data bus for counting at a rate determined by said clock signal;

first means coupled to said latch means and said counter means for generating a signal for interrupting the operation of the system in response to a matching between the contents of said counter means and said first binary number;

status storage means responsive to said first means coupled to said data bus for storing information indicative of the occurrence of said interrupt signal; for receiving selection signals;

selection means responsive to said selection signals coupled to said latch mean, said counter means, and said status storage means for selectively and operatively coupling a one of said latch means, said status storage means, and said counter means to said data bus.

4,161,788
BUBBLE MEMORY CONTROLLER WITH MULTIPAGE DATA HANDLING

Robert J. Rosenblum, Brighton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 21, 1977, Ser. No. 789,390
Int. Cl.[2] G06F *13/08*; G11C *11/02*
U.S. Cl. 364—900 **8 Claims**

1. A controller device for functionally operating a magnetic bubble memory device which includes a plurality of data storage loops wherein each loop has a plurality of bit positions for the storage of data as represented by a magnetic domain or a void, said controller device comprising:

interface control means for communicating memory command information from an external processor;

sequencing means operably connected to said interface control means for receiving command information therefrom and synchronizing the transition from one functional state to another in the magnetic bubble memory device;

page position means operably connected between said interface control means and said sequencing means for determining the accessibility of a page of data as defined by a plurality of bit positions extending across the plurality of storage loops and made up of a single bit position from each of the plurality of storage loops and disposed in the same virtual bit position therein common to each of the storage loops in the magnetic bubble memory device;

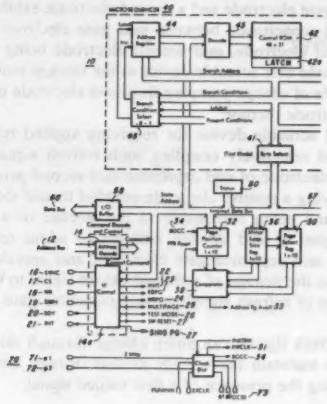
counter means operably connected to said sequencing means and having bubble propagation period information indicative of movement of data as represented by a magnetic domain or a void from one bubble-affecting functional event to another in the magnetic bubble memory device;

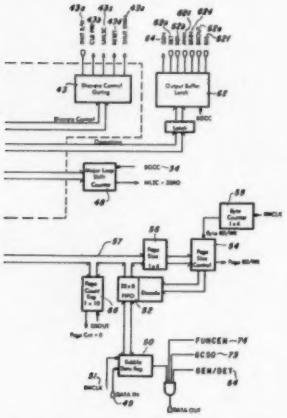
data buffer means operably connected to said interface control means, said sequencing means, and said page position means for interchanging data between the magnetic bubble memory device and the external processor in the form of plural bit words; and

output buffer means operably connected to said sequencing means for delivering bubble function-enabling commands to the magnetic bubble memory device;

said sequencing means being conditioned by said page position means identifying which page of data from said magnetic bubble memory device is being presently accessed or written and by said counter means reaching a predetermined count indicative of the movement of a specific data bit from one bubble-affecting functional event to another in the magnetic bubble memory device for potentially

effecting a change in the functional state of the magnetic bubble memory device and for directing said output buffer





means to deliver a bubble function-enabling command thereto.

4,161,789

CROSS-TAIL SENSOR FOR CROSS-TIE MEMORY

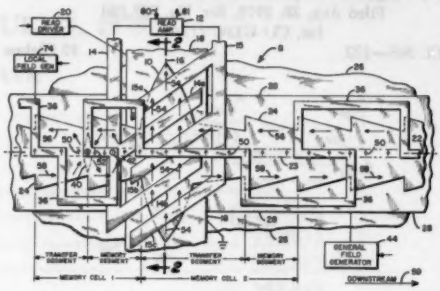
Ernest J. Torok, St. Paul; Maynard C. Paul, Bloomington, and David S. Lo, Burnsville, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,695

Int. Cl.[2] G11C *19/08*

U.S. Cl. 365—87 **3 Claims**

1. In a magnetic memory system in which binary data are stored as magnetic vector orientations about the geometric centerline of a magnetic strip, the improvement wherein a portion of said strip is configured into a sharp film whose longitudinal axis is transverse the geometric centerline of said strip and whose transverse axis is along the geometric centerline of said strip, said sharp film extending beyond the two opposing edges of said strip for forming an open flux path film possessing the characteristic of shape anisotropy and providing a magnetic easy axis generally oriented along said longitudinal axis and along which the sharp film's remanent magnetization resides wherein for all points on the sharp film's edge the angle β' between the sharp film's edge and the sharp film's longitudinal axis is equal to or greater than 0° and less than 45°, and means associated with said sharp film for reading out the orien-



tation of said sharp film's remanent magnetization along said longitudinal axis.

4,161,790

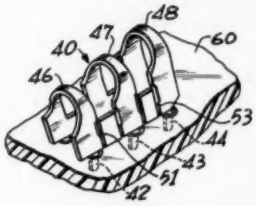
PROGRAMMABLE MODULAR ELECTRONIC REGISTER AND METHOD OF IMPLEMENTING SAME

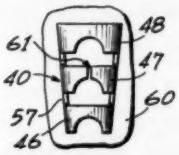
Eric Winston, Melrose Park, Pa., assignor to Jerrold Electronics Corporation, Hatboro, Pa.

Filed Mar. 24, 1978, Ser. No. 889,953

Int. Cl.[2] G11C *17/00, 17/06, 5/04*

U.S. Cl. 365—94 **6 Claims**





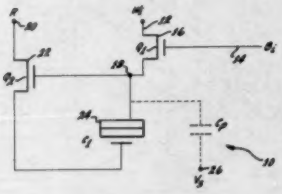
4. The method of forming a programmable binary word in an electronic substrate having a plurality of apertures therein, comprising the steps of forming at least one conductive module blank having continuous conducting first and second legs, plural cross links joining said legs, and plural tabs, at least one of said tabs extending from said second leg and a plurality of said tabs extending from said first leg about the area of the intersections of said first leg and said cross links, bending said module blank and inserting said tabs in said substrate apertures, fixedly attaching said module and said substrate, and removing each portion of said first leg intermediate said cross links.

4,161,791

AUTOMATIC REFRESH MEMORY CELL

George S. Leach, Phoenix, Ariz., assignor to Electronic Memories & Magnetics Corporation, Encino, Calif.

Filed Aug. 28, 1978, Ser. No. 937,180
Int. Cl.[2] G11C 11/40
U.S. Cl. 365—222 10 Claims



1. An integrated circuit, three element, stored charge, refreshed, semiconductor memory cell, comprising in combination:

(a) a first actuable device adapted to couple a first selection line to a storage junction, and adapted to be controlled by a second selection line;

(b) an integrated circuit field effect capacitor having an insulated gate electrode and a second electrode exhibiting substantial capacitance between said gate electrode and said second electrode, said second electrode being connected to said first actuable device at the storage junction and capable of charge pumping from one electrode to the other electrode thereof;

(c) a second actuable device for receiving applied refresh signals and selectively coupling such refresh signals to said gate electrode of said capacitor, said second actuable device having a control electrode coupled to said storage junction and being responsive to the storage of a first valued signal at said storage junction to admit refresh signals to said capacitor gate electrode, and operable in response to the storage of a second valued signal to block application of refresh signals to said capacitor gate electrode;

whereby refresh signals can pump charge through said capacitor to maintain the voltage at said storage junction representing the presence of a first valued signal.

DESIGN PATENTS

GRANTED JUL. 17, 1979

ERRATA

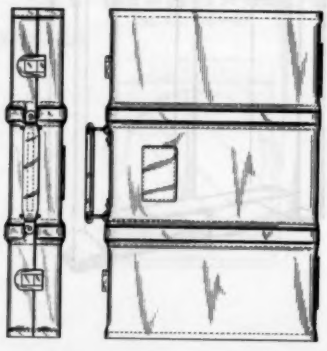
For CLASS	See PATENT NO.
D20–043	252,377
D03–039	252,409
D21–052	252,411
D21–006	252,412
D21–246	252,413
D21–041	252,414
D21–076	252,415

DESIGNS

JULY 17, 1979

252,356
KEY HOLDER
Secundino Garcia, 90 Schermerhorn St. Apt. 1-L,, Brooklyn, N.Y. 11201
Filed Sep. 22, 1977, Ser. No. 835,675
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—61

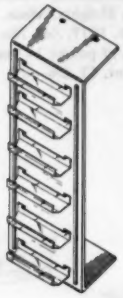
252,357
ATTACHE CASE OR SIMILAR ARTICLE
Abraham I. Tawil, New York, N.Y., assignor to H.I.T. Industries Ltd., Avenel, N.J.
Filed Oct. 13, 1977, Ser. No. 841,748
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—76



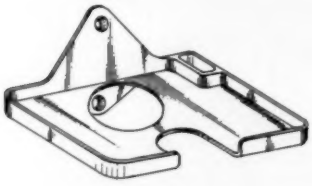
252,358
COMBINED BEDSTEAD, MATTRESS AND STORAGE UNIT
Norman H. Fowler, Morristown, Tenn., assignor to Ludlow Corporation, Needham Heights, Mass.
Filed Jan. 6, 1977, Ser. No. 757,399
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—80

252,359
SUPPORT STAND FOR A LOUDSPEAKER
Steve J. Cohen, 175 Maribeau Sq., Atlanta, Ga. 30327, and Cory W. Hillebrand, 1562 Beechcliff Dr., Atlanta, Ga. 30329
Filed Jun. 30, 1977, Ser. No. 812,007
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—85

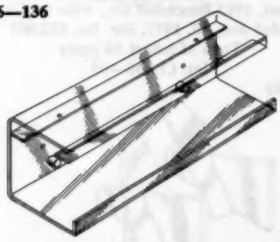
252,360
EYEGLASS CASE DISPLAY UNIT
Richard S. Dunchock, Farmington Hills, Mich., assignor to Optarac Corporation, Southfield, Mich.
Filed Apr. 5, 1978, Ser. No. 893,697
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—85



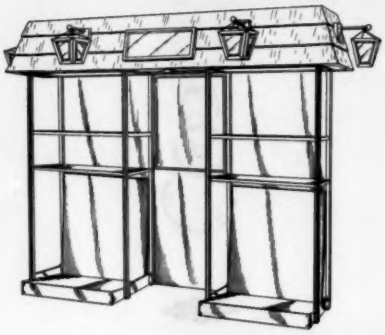
252,361
HOLDER FOR AN ELECTRIC SHAVER
Siegfried Pape, 3281 Capricorn Crescent, Mississauga, Ontario, Canada
Filed Jan. 5, 1977, Ser. No. 756,747
Term of patent 14 years
Int. Cl. D6—*04;* D23—*02*
U.S. Cl. D6—88



252,362
IMPLEMENT RACK
Stephen C. Mayes, Quarter Mile Rd., Stratton, Vt. 05155, and Frederik G. R. von Roth, II, P.O. Box 33, Peru, Vt. 05152
Filed Apr. 19, 1977, Ser. No. 788,913
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—136

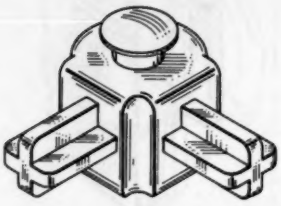


252,363
COMBINED DISPLAY RACK AND LIGHT FIXTURES THEREFOR
Lawrence G. Kern; Charles L. Davis, both of Atlanta; Rafael T. Bustos, Clarkston, and William B. Taylor, Chamblee, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Feb. 16, 1977, Ser. No. 769,370
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—153

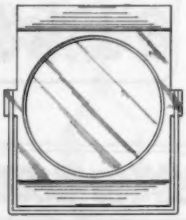


252,364
WALL MOUNTED FRAME FOR A WARDROBE CABINET
Margareta Gavel, and Peter Gavel, both of Stockholm, Sweden, assignors to BPA Byggproduktion AB, Stockholm, Sweden
Filed Apr. 27, 1976, Ser. No. 680,804
Claims priority, application Sweden, Nov. 14, 1975, 75002279
The portion of the term of this patent subsequent to Jun. 19, 1993, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191

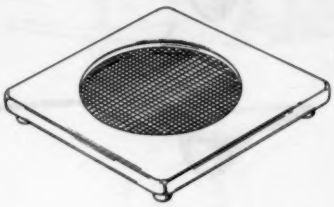
252,365
CORNER CONNECTOR FOR KNOCK-DOWN FURNITURE
William S. Durham, III, 2660 La Salle Dr., Mountain View, Calif. 94040
Filed May 23, 1977, Ser. No. 799,206
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—191

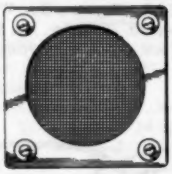


252,366
MIRROR
Elihu Cohen, New York, N.Y., assignor to Trina, Inc.
Filed Jun. 6, 1977, Ser. No. 804,089
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—237

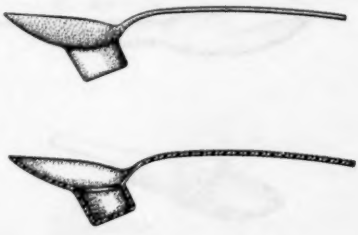


252,367
FLOUR SIFTER OR THE LIKE
Mark H. Freedman, Box 9348, Albuquerque, N. Mex. 87119; Theodore M. Freedman, 901 Dartmouth NE., Albuquerque, N. Mex. 87106, and Charles O. Weidman, Aladeda, N. Mex., assignors to Mark H. Freedman and Theodore M. Freedman, both of Albuquerque, N. Mex.
Filed Dec. 17, 1976, Ser. No. 751,662
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—47

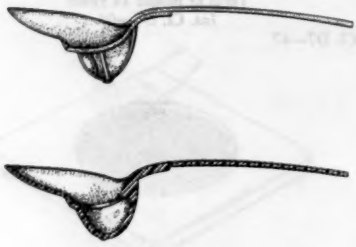




252,368
MEASURING-DISPENSING SPOON OR THE LIKE
Arthur C. Folli, 8 Old Smalleytown Rd., Warren, N.J. 07060
Filed Oct. 20, 1977, Ser. No. 843,957
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—50

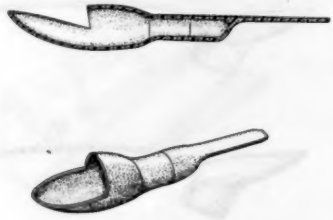


252,369
MEASURING-DISPENSING SPOON OR THE LIKE
Arthur C. Folli, 8 Old Smalleytown Rd., Warren, N.J. 07060
Filed Oct. 20, 1977, Ser. No. 843,958
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—50

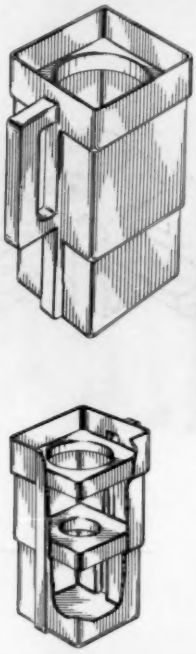


252,370
MEASURING-DISPENSING SPOON OR THE LIKE
Arthur C. Folli, 8 Old Smalleytown Rd., Warren, N.J. 07060
Filed Oct. 20, 1977, Ser. No. 843,959
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—50

252,371
MEASURING-DISPENSING SPOON OR THE LIKE
Arthur C. Folli, 8 Old Smalleytown Rd., Warren, N.J. 07060
Filed Oct. 20, 1977, Ser. No. 843,960
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—50



252,372
BOTTLE DRAINER
Thomas N. Macaulay, 2432 E. South Mountain Ave., Phoenix, Ariz. 85040
Filed Feb. 16, 1977, Ser. No. 769,208
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—70

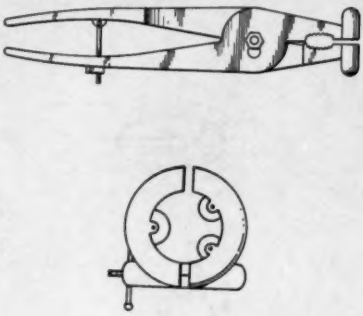


252,373
COOKING POT
Richard B. Eisenrod, Los Angeles, Calif., assignor to Household Manufacturing Company, Los Angeles, Calif.
Filed Aug. 29, 1977, Ser. No. 828,774
Term of patent 14 years
Int. Cl. D7—*01, 02*
U.S. Cl. D7—85

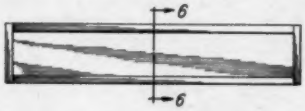
252,374
NUTCRACKER
Paul Matisse, Cambridge, Mass., assignor to Kalliroscope Corporation, Cambridge, Mass.
Filed Jun. 23, 1977, Ser. No. 809,477
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—98

252,375
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Aug. 15, 1977, Ser. No. 824,411
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

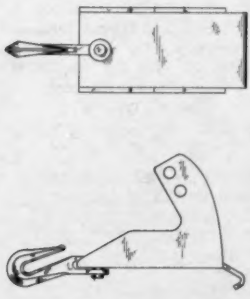
252,376
TUBING CUTTER
John J. Dobias, 1212 Sumach Dr., Windsor, Ontario, Canada (N8S 2S4)
Filed Jul. 25, 1977, Ser. No. 818,620
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—60



252,377
HOLDER FOR BUMPER STICKERS
Robert L. Mallory, and Sheilah A. Mallory, both of 3160A N. Truckee La., Sparks, Nev. 89431
Filed Aug. 1, 1977, Ser. No. 820,950
Term of patent 14 years
Int. Cl. D8—*8;* D12—*16*
U.S. Cl. D20—43

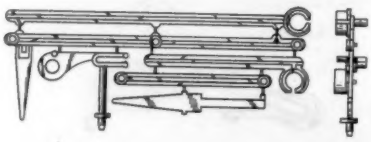


252,378
COMBINED HOOK AND SUPPORTING FRAME
William J. Meis, 6 Valley Dr., Crescent, Iowa 51526
Filed Apr. 28, 1977, Ser. No. 791,803
Term of patent 14 years
Int. Cl. D8—*05;* D12—*16*
U.S. Cl. D8—367



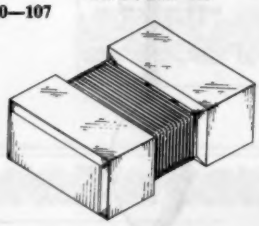
252,379
BOTTLE
Philip F. Hartung, Dean Bldg. 655 Main St., East Greenwich, R.I. 02818
Filed Aug. 30, 1977, Ser. No. 829,121
Term of patent 7 years
Int. Cl. D9—*01*
U.S. Cl. D9—48

252,380
PANTOGRAPH PACKAGE
Sam Kupperman, Chicago, and Dennis Kupperman, Glenview, both of Ill., assignors to RB Toy Development Co., Skokie, Ill.
Filed Apr. 25, 1977, Ser. No. 790,489
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—193



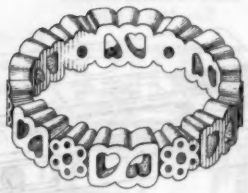
252,381
SPRING PRESSURE GAUGE OR SIMILAR ARTICLE
Thoburn T. Mosier, 3878 Chiselhurst Pl., Columbus, Ohio 43220
Filed Oct. 6, 1977, Ser. No. 840,060
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—83

252,382
FLOATING MARKER
Frank C. Hutmacher, Box 73, Mead, Nebr. 68041
Filed May 16, 1977, Ser. No. 796,938
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—107



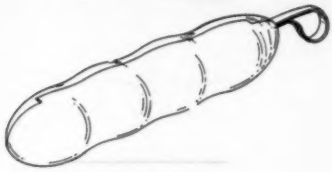
252,383
COMBINED RUNWAY LOCATOR AND WIND DIRECTION INDICATOR
Theodore Jackson, P.O. Box 407, and Ken Johnson, P.O. Box 303, both of Council, Id. 83612
Filed Jul. 21, 1978, Ser. No. 926,709
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109

252,384
FINGER RING
James K. Arakaki, 607 S. Hill St., Los Angeles, Calif. 90014
Filed Dec. 8, 1977, Ser. No. 858,886
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—38

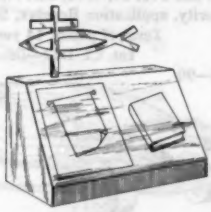


252,385
CHRISTMAS TREE ORNAMENT
Jerome J. Wieselman, 5261 Sir Bors, St. Louis, Mo. 63129
Filed Apr. 14, 1977, Ser. No. 787,343
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—125

252,386
ADULT PACIFICATION NOVELTY
Judith A. Onderdonk, 2285 W. Henrietta Rd., Rochester, N.Y. 14623
Filed Jun. 24, 1976, Ser. No. 699,455
Term of patent 7 years
Int. Cl. D11—*04*
U.S. Cl. D11—157

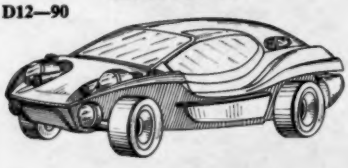


252,387
NAME PLATE OR THE LIKE
Gordon H. Lawrence, 14000 E. Linvale Pl., Aurora, Colo. 80014
Filed Apr. 11, 1977, Ser. No. 786,378
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—131



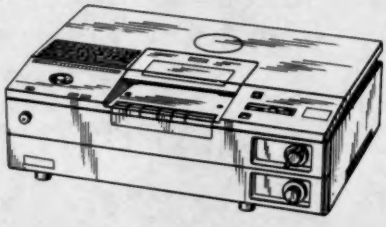
252,388
MOBILE STAND FOR SUPPORTING A TABLE TOP FOR OFFICE MACHINE
Kim Fjellø-Jensen, No. 4 Bellevue, Rudkøbing, Denmark (5900)
Filed Mar. 3, 1978, Ser. No. 883,333
Claims priority, application Denmark, Sep. 6, 1977, 682/77
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—25

252,389
AUTOMOBILE
Eric A. Dedeken, Keizerin Maria Theresiastraat 62, 9000 Gent, Belgium
Filed Feb. 24, 1978, Ser. No. 882,026
Claims priority, application Benelux, Sep. 1, 1977, 01073-00
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—90

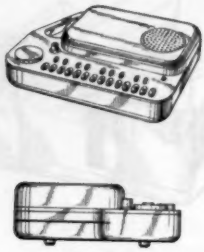


252,390
FIXED PITCH PROPELLER FOR AIRCRAFT
Walter B. Voisard, Beavercreek Township, Greene County, Ohio, assignor to The Cessna Aircraft Company
Filed Apr. 11, 1977, Ser. No. 786,605
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—214

252,391
VIDEO TAPE RECORDER
Toshio Ohya, Omiya, and Noriaki Kozuka, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed May 6, 1977, Ser. No. 794,675
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—2

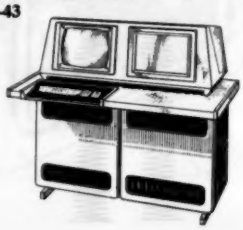


252,392
RECORD PLAYER
Hoi T. Vong, 179/810 Connaught Rd. West, Cheung Ka Industrial Bldg., 19th Floor, Block A, West Point, Hong Kong
Filed Mar. 29, 1978, Ser. No. 891,483
Claims priority, application United Kingdom, Feb. 28, 1978, 983529/78
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—14

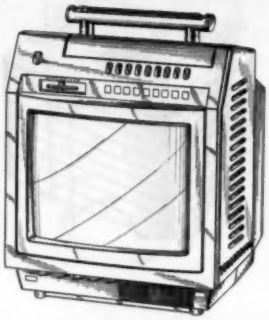


252,393
RECORD PLAYER
Takashi Kashidaira, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan
Filed Apr. 5, 1977, Ser. No. 784,868
Claims priority, application Japan, Nov. 19, 1976, 51-45730
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—17

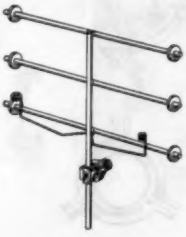
252,394
CONTROL AND DISPLAY CONSOLE
Richard J. Schick, Park Ridge, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 14, 1977, Ser. No. 860,536
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—43



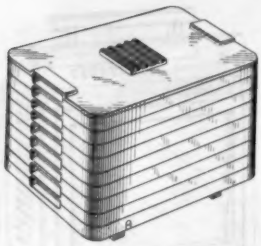
252,395
TELEVISION RECEIVER
Toshio Ohya, Omiya, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 15, 1977, Ser. No. 816,161
Claims priority, application Japan, Jan. 18, 1977, 52-1103
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—80



252,396
THREAD TREE
Shirley A. Gros, 12026 Thistle Brae Ter., Lakeside, Calif. 92040
Filed May 23, 1977, Ser. No. 799,197
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—78

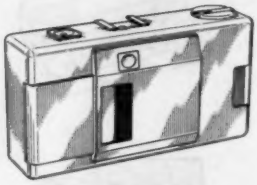


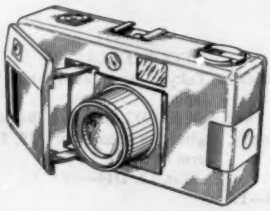
252,397
FOOD DEHYDRATOR
Michael A. Cousins, 8 Jayne Ave., Huntington Station, N.Y. 11746, and Morison S. Cousins, 229 E. 29 St., New York, N.Y. 10016
Filed Apr. 1, 1977, Ser. No. 783,809
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—110



252,398
BORING BAR HOUSING
Ernest E. Grimsley, 4533 Wake Forest Rd., Portsmouth, Va. 23703
Filed Feb. 23, 1977, Ser. No. 775,282
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—140

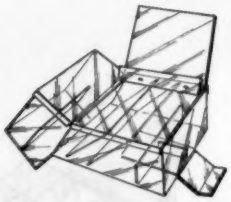
252,399
PHOTOGRAPHIC CAMERA
Heinz Waaske, Brunswick, Fed. Rep. of Germany, assignor to Rollei-Werke Franke & Heidecke, Brunswick, Fed. Rep. of Germany
Filed Oct. 6, 1977, Ser. No. 840,115
Claims priority, application Fed. Rep. of Germany, May 20, 1977, 1128
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—05



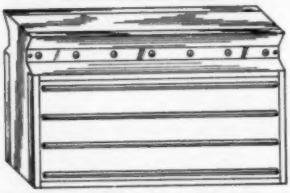


252,400
MONOGRAM
Lars G. Rosenblad, Huskvarna, Sweden, assignor to Husqvarna AB, Huskvarna, Sweden
Filed Apr. 28, 1977, Ser. No. 792,039
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—24

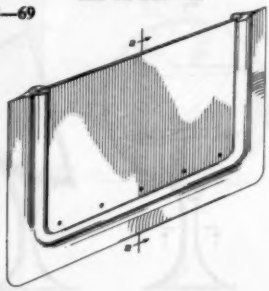
252,401
DESK FILE
Clifford P. Heintz, 33-33 Lakeside Dr., Bristol, Conn. 06010
Filed Jul. 11, 1977, Ser. No. 814,403
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—90



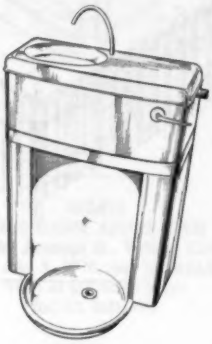
252,402
ILLUMINATED SIGN WITH CHANNELS FOR MOVEABLE CHARACTER PLATES
Ralph Kutschmende, 395 Manhattan Ave., Brooklyn, N.Y. 11211
Filed Oct. 6, 1977, Ser. No. 840,053
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—10



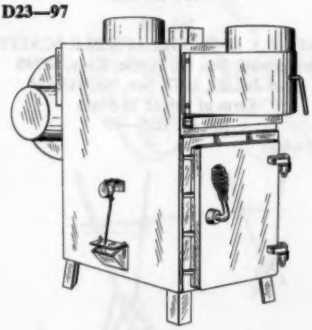
252,403
WATER DAM FOR A FLUSH TANK
Richard E. Baron, 14439 N. 73rd St., Scottsdale, Ariz. 85260
Filed May 13, 1977, Ser. No. 796,762
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



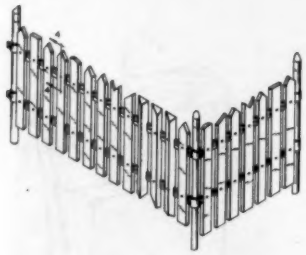
252,404
COMBINED BASIN AND URINAL
Ernest P. Basterfield, 22 High Rd. Eastleigh, Edenvale, Transvaal, South Africa
Filed Dec. 7, 1977, Ser. No. 858,461
Term of patent 17 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



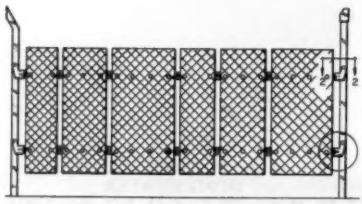
252,405
HOME HEATER
Friedrich W. Heine, 577 Garfield, P.O. Box 10924, Eugene, Oreg. 97401
Filed Oct. 25, 1977, Ser. No. 845,152
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



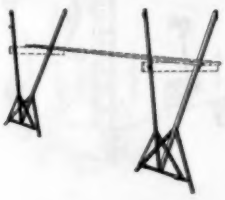
252,406
FENCE
John J. Dobias, 1212 Sumach Dr., Windsor, Ontario, Canada N8S 2S4
Filed Feb. 22, 1977, Ser. No. 770,928
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—38



252,407
FENCE
John J. Dobias, 1212 Sumach Dr., Windsor, Ontario, Canada N8S 2S4
Filed Feb. 22, 1977, Ser. No. 770,929
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—38

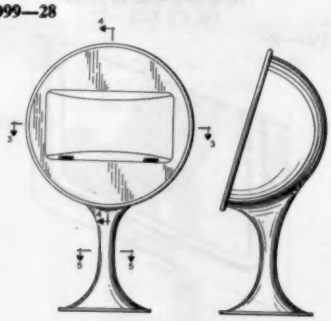


252,408
ADJUSTABLE AND COLLAPSIBLE SCAFFOLD
Eugene F. Dempewolf, Box 80, Hoxie, Kans. 67740
Filed Jul. 22, 1977, Ser. No. 818,114
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—66



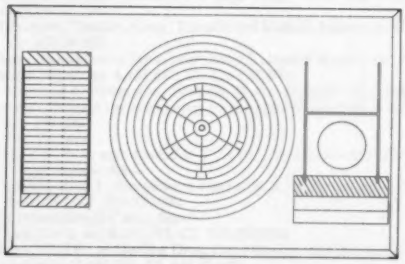
252,409
COSMETIC ORGANIZER
Arnold Rose, Providence, R.I., and Elihu Cohen, New York, N.Y., assignors to Trina, Inc.
Filed Aug. 29, 1977, Ser. No. 828,953
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D3—39

252,410
FINANCIAL TRANSACTION KIOSK
Clarence F. Graser, Columbus, Ohio, assignor to The City National Bank & Trust Company, Columbus, Ohio
Filed Jun. 30, 1977, Ser. No. 811,771
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D99—28

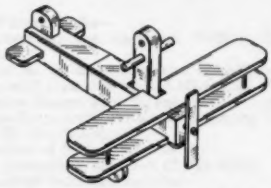


252,411
QUEEN CHESS PIECE
Robert R. Hollendonner, 1830 "T" St., Washington, D.C. 20009
Division of Ser. No. 301,098, Oct. 26, 1972. This application Feb. 26, 1976, Ser. No. 658,654
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—52

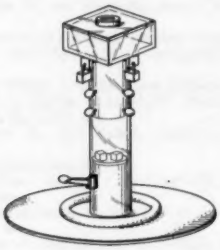
252,412
DART GAME BOARD OR THE LIKE
Earl L. Barker, P.O. Box 2573, Sanford, N.C. 27330
Filed May 19, 1977, Ser. No. 798,440
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—6



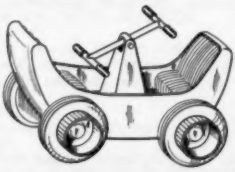
252,413
AIRPLANE SWING SEAT
Jane C. Knight, 316 Ralston Ave., and Robert M. Norman, 370 Panoramic Way, both of Mill Valley, Calif. 94941
Filed Aug. 8, 1977, Ser. No. 822,935
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—246



252,414
DICE GAME APPARATUS
Manuel Camara, 600 Jennings St., Vallejo, Calif. 94590
Filed Aug. 8, 1977, Ser. No. 822,938
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—41



252,415
TOY VEHICLE
Jerry L. Ellis, 6520 Shadowlawn, Dearborn Heights, Mich. 48127
Filed Aug. 24, 1976, Ser. No. 717,469
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—76



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF JULY, 1979

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. O. Smith Corporation: *See—*
Buckman, John B.; and Lykes, Robert E., 4,161,667, Cl. 310-51.000.

Abbott Laboratories: *See—*
Genese, Joseph N., 4,161,178, Cl. 128-272.300.
Plattner, Jacob J.; Voss, Houston F.; and Magic, Susan E., 4,161,488, Cl. 260-455.00R.

Abe, Masaru: *See—*
Suzuki, Yasuo; Abe, Masaru; and Tezuka, Toshiro, 4,161,203, Cl. 152-361.00R.

Abex Corporation: *See—*
Saunders, Robert L.; and Hone, George D., 4,161,049, Cl. 14-71.500.

Abraham, Nedumparambil A.; Bagli, Jehan F.; and Bogri, Tibor, to Ayerst, McKenna and Harrison Limited. 11 Hydroxy methyl 11-deoxyprostaglandin E_1. 4,161,608, Cl. 560-121.000.

Abramson, Harvey J., to Metatech Corporation. Vacuum bag for wound drainage. 4,161,179, Cl. 128-278.000.

Accessories Manufacturers, Ltd.: *See—*
Bishop, Allan T.; and Wytruk, Maurice, 4,161,274, Cl. 232-24.000.

Acher, Jacques: *See—*
Bulteau, Gerard; Acher, Jacques; and Monier, Jean C., 4,161,532, Cl. 424-274.000.

Adjustable Clamp Company: *See—*
Holman, Daniel V., 4,161,311, Cl. 269-49.000.

Agatsuma, Ko; Koyama, Kenichi; Todoriki, Itaru; Yamaguchi, Tetsuo; Kohno, Osamu; and Saito, Takashi, to Agency of Industrial Science and Technology; and Fujikura Cable Works, Ltd., The. Method for producing hollow superconducting cables. 4,161,062, Cl. 29-599.000.

Agence Nationale de Valorisation de la Recherche: *See—*
Sigwalt, Pierre; Guyot, Patrick; and Fontanille, Michel, 4,161,494, Cl. 260-665.00R.

Agency of Industrial Science and Technology: *See—*
Agatsuma, Ko; Koyama, Kenichi; Todoriki, Itaru; Yamaguchi, Tetsuo; Kohno, Osamu; and Saito, Takashi, 4,161,062, Cl. 29-599.000.

AGFA-GEVAERT N.V.: *See—*
Gilliams, Yvan K.; and De Volder, Noel J., 4,161,453, Cl. 252-62.10L.

Aimar, Michele, to ITW Fastex Italia. Insulating assembly for stator-slots of electrical motors. 4,161,669, Cl. 310-194.000.

Air Products and Chemicals, Inc.: *See—*
Seymour, John P.; Mascioli, Rocco L.; Beitchman, Burton D.; and Zaluska, Philip J., 4,161,575, Cl. 528-90.000.

Airborne Life Support Systems, Inc.: *See—*
Pickering, Donald E., 4,161,172, Cl. 128-1.00B.

Airpax Electronics, Inc.: *See—*
Carlson, Peter J., 4,161,693, Cl. 324-173.000.

Airwick Industries, Inc.: *See—*
Smith, James A.; and McLaughlin, James H., 4,161,449, Cl. 252-8.600.

Aisin Seiki Kabushiki Kaisha: *See—*
Nawa, Hideo; and Takikawa, Yujiro, 4,161,153, Cl. 112-279.000.

Ajima, Takashi: *See—*
Yonezawa, Toshio; Ajima, Takashi; and Uchida, Masato, 4,161,743, Cl. 357-54.000.

Akamatsu, Masahiko, to Mitsubishi Denki Kabushiki Kaisha. AC rotary machine apparatus. 4,161,680, Cl. 318-722.000.

Akin, Cavit; and Darrington, Franklin D., to Standard Oil Company (Indiana). Process for texturizing proteinaceous materials. 4,161,546, Cl. 426-104.000.

Akin, Joe T.: *See—*
Matheny, Paul; and Akin, Joe T., 4,161,285, Cl. 239-132.300.

Aktiebolaget Hassle: *See—*
Carlsson, Enar I.; Samuelsson, Gustav B. R.; and Lundgren, Bo T., 4,161,542, Cl. 424-330.000.

Albany International Corp.: *See—*
Khan, Mir I. A., 4,161,195, Cl. 139-383.00A.

Albertson, Noel F., to Sterling Drug Inc. 1-Oxygenated-2,6-methano-3-benzazocines. 4,161,598, Cl. 546-97.000.

Albrecht, Gerd: *See—*
Goldstein, Guy; Roussin-Moynier, Yves; and Albrecht, Gerd, 4,161,385, Cl. 425-462.000.

Albright, Alva Z. Tree harvester and buncher. 4,161,200, Cl. 144-34.00R.

Albright, Eugene A. Helical antenna. 4,161,737, Cl. 343-749.000.

Alcan Aluminum Corporation: *See—*
Alia, Dominic A., 4,161,419, Cl. 156-51.000.
Walton, William T., III, 4,161,416, Cl. 148-12.70A.

Alexander, Brian S. Figure toy limb with twirling hand unit. 4,161,082, Cl. 46-119.000.

Alexander, William H.: *See—*
Bell, Robert R.; and Alexander, William H., 4,161,308, Cl. 251-228.000.

Alia, Dominic A., to Alcan Aluminum Corporation. Production of coated electrical conductor cable. 4,161,419, Cl. 156-51.000.

Alisic, Slobodan; Hamer, Rene H.; and Fleskens, Ludovicus A. H., to U.S. Philips Corporation. Device for displaying variable quantities. 4,161,676, Cl. 315-395.000.

All India Institute of Medical Sciences: *See—*
Talwar, Gursaran P., 4,161,519, Cl. 424-88.000.

Allegheny Ludlum Industries, Inc.: *See—*
Tommaney, Joseph W.; and Burton, Claudia J., 4,161,398, Cl. 75-10.00C.
Tommaney, Joseph W.; and Burton, Claudia J., 4,161,399, Cl. 75-10.00C.

Allied Chemical Corporation: *See—*
Parker, Herbert W., 4,161,391, Cl. 432-209.000.
Porter, Chester D., 4,161,192, Cl. 138-44.000.

Allis-Chalmers Corporation: *See—*
Moore, Donald C., 4,161,444, Cl. 209-169.000.

Altman, Paul C. Protected rocker-arm safety device for presses. 4,161,140, Cl. 100-53.000.

Alton, Ahdor H.: *See—*
Kohn, Mitchell I.; and Alton, Ahdor H., 4,161,679, Cl. 318-685.000.

Aluminum Company of America: *See—*
Vernam, William D.; and Evancho, Joseph W., 4,161,553, Cl. 428-654.000.

Amancharla, Amareswar, to Baker International Corporation. Mechanical latch with hydraulic locking mechanism. 4,161,216, Cl. 166-193.000.

Amann, Bertram, to Wandel & Goltermann. Method of and system for generating digital test signals. 4,161,627, Cl. 179-15.0BF.

American Cyanamid Company: *See—*
Wasser, Richard B.; and Sedlak, John A., 4,161,423, Cl. 162-163.000.

American Motors Corporation: *See—*
Klos, Ted; and Tiedt, Herman J., 4,161,649, Cl. 235-92.0MP.

Ames, Thomas J.: *See—*
Cuiper, Glen H.; and Ames, Thomas J., 4,161,367, Cl. 405-169.000.

AMP Incorporated: *See—*
Cherian, Gabriel B.; and Scheingold, William S., 4,161,346, Cl. 339-17.00M.

Anderson, Perry W.: *See—*
Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergios, 4,161,543, Cl. 426-2.000.

Anderson, Richard D.; and Wedel, John A., to Pako Corporation. Neghold assembly for photographic printer. 4,161,365, Cl. 355-75.000.

Anderson, Roy E., to General Electric Company. Radio determination using satellites transmitting timing signals with correction by active range measurement. 4,161,730, Cl. 343-6.50R.

Anderson, Roy E., to General Electric Company. Position surveillance using one active ranging satellite and time of arrival of a signal from an independent satellite. 4,161,734, Cl. 343-100.0ST.

Ando, Tadahiko; Shibata, Takehiko; Ikawa, Shukuko; and Kim, Cho-lung, to Rikagaku Kenkyusho. Novel endonuclease and process for production thereof. 4,161,424, Cl. 435-199.000.

Aoki, Eiichiro: *See—*
Yamada, Shigeru; and Aoki, Eiichiro, 4,161,128, Cl. 84-1.260.

Appleman, Theodore C., to Eastside Machine & Welding, Inc. Flame spraying process for materials requiring fusion. 4,161,555, Cl. 427-333.000.

Arai, Hiromichi: *See—*
Shiraki, Yoshiro; Haraoka, Hiroshi; and Arai, Hiromichi, 4,161,511, Cl. 423-341.000.

Arai, Yasunori, to Asahi Kogaku Kogyo Kabushiki Kaisha. Telescopic photographing lens system. 4,161,350, Cl. 350-220.000.

Argus Chemical Corporation: *See—*
Halle, Reidar; and Bock, Lawrence A., 4,161,485, Cl. 260-448.20R.

Armstong, James E., to Pool Company. Offshore fixed platform and method of erecting the same. 4,161,376, Cl. 405-196.000.

Arnason, Walter. Cutting and gouging head for welding equipment. 4,161,642, Cl. 219-70.000.

Arny, Deane C.; and Lindow, Steven E., to Wisconsin Alumni Research Foundation. Method for reducing temperature at which plants freeze. 4,161,084, Cl. 47-2.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Arai, Yasunori, 4,161,350, Cl. 350-220.000.
Kurei, Hiroshi, 4,161,354, Cl. 354-36.000.

ASEA Aktiebolag: *See—*
Stenkvist, Sven-Einar, 4,161,618, Cl. 13-12.000.

Ataliers des Charmilles, S.A.: *See—*
Bonga, Benno, 4,161,641, Cl. 219-69.00M.
Atex, Incorporated: *See—*
Ying, Charles W., 4,161,777, Cl. 364-200.000.
Atlas Copco Aktiebolag: *See—*
Carlin, Carl-Gustaf; and Skyllermark, Stefan M. B., 4,161,220, Cl. 173-1.000.
Carlin, Carl-Gustaf; and Skyllermark, Stefan M. B., 4,161,221, Cl. 173-1.000.
Audeh, Costandi A.; and Chen, Nai Y., to Mobil Oil Corporation. Processing of tar sands. 4,161,442, Cl. 208-11.00R.
Automotive Environmental Systems, Inc.: *See—*
Fegraus, Clark E.; and D'Angelo, Severino, 4,161,116, Cl. 73-117.000.
Avedko B.V.: *See—*
Kooiman, Pieter L., 4,161,146, Cl. 108-136.000.
Avtex Fibers Inc.: *See—*
Price, John A.; and Stange, Hugo, 4,161,577, Cl. 528-173.000.
Ayers, Louis M.: *See—*
Bourne, Henry A., Jr.; Ayers, Louis M.; and Wiseman, Minor R., 4,161,215, Cl. 166-65.00M.
Ayerst, McKenna and Harrison Limited: *See—*
Abraham, Nedumparambil A.; Bagli, Jehan F.; and Bogri, Tibor, 4,161,608, Cl. 560-121.000.
Azuma, Masaaki: *See—*
Yonezawa, Kazuya; Furukawa, Hisao; and Azuma, Masaaki, 4,161,572, Cl. 525-100.000.
B. F. Goodrich Company, The: *See—*
Kroenke, William J., 4,161,466, Cl. 260-28.00R.
Lehr, Marvin H., 4,161,472, Cl. 525-4.000.
Nicholas, Paul P., 4,161,464, Cl. 260-2.300.
Powell, Joe A.; Messerly, James W.; and Shippy, Ronald L., 4,161,202, Cl. 152-347.000.
Babcock & Wilcox Company, The: *See—*
Stump, Paul E., 4,161,112, Cl. 72-283.000.
Bachand, Pierre. Knockdown connector and guideway assembly. 4,161,303, Cl. 248-246.000.
Bacsanyi, Thomas J.; and Harmon, Edward J., to Ransburg Corporation. Imbalance determining apparatus. 4,161,666, Cl. 310-27.000.
Baggstrom, Stig G., to Telefonaktiebolaget L M Ericsson. Process and apparatus for feeding elongated articles in oriented positions. 4,161,245, Cl. 198-399.000.
Bagli, Jehan F.: *See—*
Abraham, Nedumparambil A.; Bagli, Jehan F.; and Bogri, Tibor, 4,161,608, Cl. 560-121.000.
Baiel, James J.; and Tsonopoulos, Constantine, to Exxon Research & Engineering Co. High-pressure azeotropic distillation for the manufacture of anhydrous alcohols. 4,161,429, Cl. 203-18.000.
Bailey, Jack H.; and Ottaway, Gerald H., to International Business Machines Corporation. Video recording disk with interlacing of data for frames on the same track. 4,161,753, Cl. 358-128.000.
Baker International Corporation: *See—*
Amancharla, Amareswar, 4,161,216, Cl. 166-193.000.
Baker, Richard M.: *See—*
Groves, Stanley E.; Schriber, Gene A.; Spinks, Brian M.; Baker, Richard M.; Daly, Thomas C.; and Means, Rodney J., 4,161,787, Cl. 364-900.000.
Bakhalov, Vladimir I.; Volvenkov, Gennady V.; Polukhin, Valentin P.; Starokadomsky, Vadim S.; and Ter-Bogdasarov, Arkady V., to Vsesojuzny Nauchno-Issledovatelsky Institut Legkogo I Textilnogo Mashinostroenia. Method of sewing a button on a thread stem and semi-automatic machine for performing same. 4,161,148, Cl. 112-110.000.
Baldini, Luciano, to Bieffe S.p.A. Process of making a filter element for use in intravenous infusions. 4,161,504, Cl. 264-163.000.
Banwell, Thomas C.: *See—*
Banwell, Thomas J.; and Banwell, Thomas C., 4,161,118, Cl. 73-188.000.
Banwell, Thomas J.; and Banwell, Thomas C. Force direction transducer. 4,161,118, Cl. 73-188.000.
Baran, Miroslav, to Bata Shoe Company, Inc. Cutting apparatus for flatbed sewing machine. 4,161,149, Cl. 112-130.000.
Barclay, Donald J.; and Morgan, William M., to International Business Machines Corporation. Electroplating chromium and its alloys. 4,161,432, Cl. 204-51.000.
Bardenhagen, Dietrich: *See—*
Blidung, Otto; Tolasch, Gerhard; and Bardenhagen, Dietrich, 4,161,094, Cl. 53-493.000.
Barger, Frank L.: *See—*
Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., 4,161,427, Cl. 196-14.520.
Barouh, Victor; Rottmann, George; and DeSimone, Salvatore, to Eaton Allen Corp. Adhesively correctable transfer medium with delayed alteration resistance characteristics. 4,161,551, Cl. 428-539.000.
Barr, Thomas A., to United States of America, National Aeronautics and Space Administration. Thickness measurement system. 4,161,731, Cl. 343-14.000.
Barrault, Joel; Guisnet, Michel; Lucien, Jacques; and Maurel, Raymond, to Societe Nationale Elf Aquitaine (Production). Process for the production of mercaptans. 4,161,493, Cl. 260-609.00R.
BASF Aktiengesellschaft: *See—*
Baumann, Hans; and Oberlinner, Andreas, 4,161,589, Cl. 544-70.000.
BASF Wyandotte Corporation: *See—*
Davis, John E.; and Davis, Pauls, 4,161,468, Cl. 260-30.40R.
Basilico, Albert R., to International Business Machines Corporation. High density video disk having two pit depths. 4,161,752, Cl. 358-128.000.
Bastenhof, Dirk, to Societe d'Etudes de Machines Thermiques S.E.M.T. Device for damping pressure waves in an internal combustion engine fuel injection system. 4,161,161, Cl. 123-32.0JV.
Bata Shoe Company, Inc.: *See—*
Baran, Miroslav, 4,161,149, Cl. 112-130.000.
Bates, James W., to Gulton Industries, Inc. Inverter ripple regulator. 4,161,771, Cl. 363-43.000.
Battelle-Institute e.V.: *See—*
Bol, Johannes; and Freund, Hans-Ulrich, 4,161,366, Cl. 356-56.000.
Batzdorff, Alfred, to Keller Corp., The. Brick blending apparatus. 4,161,368, Cl. 414-114.000.
Batzer, Hans; Habermeier, Jurgen; and Porret, Daniel, to Ciba-Geigy AG. Dialcohols. 4,161,594, Cl. 544-302.000.
Bauer, David N. Erosion resistant control valve. 4,161,187, Cl. 137-375.000.
Baumann, Hans; and Oberlinner, Andreas, to BASF Aktiengesellschaft. Spirodipyrans. 4,161,589, Cl. 544-70.000.
Baxter, Larry K.: *See—*
Spencer, David R.; and Baxter, Larry K., 4,161,757, Cl. 358-261.000.
Bayer Aktiengesellschaft: *See—*
Kishino, Shigeo; Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; and Tsuboi, Shinichi, 4,161,524, Cl. 424-215.000.
Klauke, Erich; Kysela, Ernst; and Dorlars, Alfons, 4,161,593, Cl. 544-217.000.
Priemer, Joachim; Nicklas, Georg; and Schulz, Nikolaus, 4,161,481, Cl. 260-369.000.
Sinn, Gustav; Matner, Martin; and Bross, Hermann J., 4,161,456, Cl. 252-182.000.
Weissel, Oskar, 4,161,492, Cl. 260-563.00R.
BBC Brown, Boveri & Company Limited: *See—*
Maier, Heribert, 4,161,636, Cl. 200-148.00A.
Nowack, Helmut; and Rappange, Adelbert, 4,161,316, Cl. 277-9.000.
Beamer, John D.; and Wichman, William J., to Rain Bird Sprinkler Manufacturing Corporation. Self-compensating nozzle construction. 4,161,286, Cl. 239-230.000.
Beardsley, Richard G.; and Currey, Norman S., to Lockheed Corporation. Deployment apparatus for stores from vehicles. 4,161,301, Cl. 244-137.00R.
Beaver, William L.: *See—*
Zitelli, Louis T.; and Beaver, William L., 4,161,121, Cl. 73-626.000.
Becker, Edward A.: *See—*
Spencer, David H.; and Becker, Edward A., 4,161,779, Cl. 364-200.000.
Beckman Instruments, Inc.: *See—*
Perry, Andrew W., 4,161,425, Cl. 435-11.000.
Bedini, Remo; and De Rossi, Danilo, to FIAT Societa per Azioni. Control circuit for rear view mirrors provided with a liquid crystal cell. 4,161,653, Cl. 250-215.000.
Beelmann, Richard; Kerstges, Johannes; and Mertens, Paul, to Deutsche Babcock Aktiengesellschaft. Blower beater mill. 4,161,293, Cl. 241-56.000.
Beghin-Say: *See—*
Goldstein, Guy; Roussin-Moynier, Yves; and Albrecht, Gerd, 4,161,385, Cl. 425-462.000.
Begnaud, John D.: *See—*
Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., 4,161,427, Cl. 196-14.520.
Begun, James A., to Martin, Howard W., a part interest. Supporting frame for furniture. 4,161,345, Cl. 312-253.000.
Behn, Reinhard, to Siemens Aktiengesellschaft. Regenerable electric wound capacitor which is divided into a plurality of sub-capacitances. 4,161,774, Cl. 363-59.000.
Behringwerke Aktiengesellschaft: *See—*
Hirsch, Wolfgang, 4,161,507, Cl. 422-56.000.
Beitchman, Burton D.: *See—*
Seymour, John P.; Mascioli, Rocco L.; Beitchman, Burton D.; and Zaluska, Philip J., 4,161,575, Cl. 528-90.000.
Bekey, Ivan; and Wolk, Roger S. Method for constructing registered teeth castings. 4,161,067, Cl. 32-17.000.
Bell, John H., to Fisons Limited. Composition for treating airway disease. 4,161,516, Cl. 424-14.000.
Bell, Robert R.; and Alexander, William H., to Vapor Corporation. Switching valve assembly for fluid motor-driven injector pump. 4,161,308, Cl. 251-228.000.
Bell Telephone Laboratories, Incorporated: *See—*
Bellisio, Jules A., 4,161,634, Cl. 179-175.31R.
Marcuse, Dietrich; and Presby, Herman M., 4,161,656, Cl. 250-459.000.
Wolaver, Dan H., 4,161,635, Cl. 179-175.31R.
Bellet, Eugene M.; and Joshi, Madan M., to Kalo Laboratories, Inc. Liquid combination seed treatment compositions. 4,161,397, Cl. 71-7.000.
Bellina, Russell F., to Du Pont de Nemours, E. I., and Company. Butyramides and butyrates. 4,161,591, Cl. 544-164.000.
Bellisio, Jules A., to Bell Telephone Laboratories, Incorporated. Countdown addressing system. 4,161,634, Cl. 179-175.31R.
Beloit Corporation: *See—*
Justus, Edgar J., 4,161,205, Cl. 162-133.000.
Belush, Richard; and Wade, James A., to Cummins Engine Company, Inc. Piston for an internal combustion engine. 4,161,165, Cl. 123-193.00P.

Benasutti, Roger; and Koenig, Thomas A., to Conwed Corporation. Task lighting system with angularly-displaced fluorescent tubes. 4,161,767, Cl. 362-33.000.

Bennett, James P.; and Harms, David C., to Plessey Handel und Investments AG. Circuit arrangement for use in telephone systems. 4,161,630, Cl. 179-18.0EB.

Bentele, Max, to Conco Medical Co., Inc. Surgical finger and fence splints. 4,161,175, Cl. 128-87.00A.

Bentley, Clarence. Emitter. 4,161,291, Cl. 239-542.000.

Bepex Corporation: *See*—
Herron, Dale J., 4,161,578, Cl. 528-272.000.

Berardinelli, Frank M.: *See*—
Edelman, Robert; Berardinelli, Frank M.; and Wissbrun, Kurt F., 4,161,579, Cl. 525-444.000.

Berber, Viktor A.; Mozyakov, Vladimir I.; and Khodosov, Nikolai A. Centrifugal liquid cleaner. 4,161,275, Cl. 233-31.000.

Beregi, Laszlo; Hugon, Pierre; Duhault, Jacques; and Boulanger, Michelle, to Science Union et Cie, Societe Francaise de Recherche Medicale. Phenoxy phenyl pyrrolidine compounds, compositions and methods of use. 4,161,529, Cl. 424-274.000.

Bernhardt, Christian A.; and Mohlenkamp, Marvin J., Jr., to Procter & Gamble Company, The. Meat aroma precursor composition. 4,161,550, Cl. 426-533.000.

Berry, Edwin X. Vibration sensitive valve operating apparatus. 4,161,183, Cl. 137-39.000.

BHN, Inc.: *See*—
Cottingham, Hugh V.; and Scrocco, Joseph, 4,161,042, Cl. 3-17.00R.

Bianchi, Valerio: *See*—
Latsch, Reinhard; and Bianchi, Valerio, 4,161,162, Cl. 123-32.0EA.

Biberger, Hans. Blade arrangement for a motor driven sickle or rotary mowing machines, and such machines. 4,161,096, Cl. 56-12.900.

Bicht, John R.: *See*—
Warner, Peter S.; and Bicht, John R., 4,161,226, Cl. 180-65.00E.

BICOSA Societe de Recherches: *See*—
Courier de Mere, Henri E., 4,161,387, Cl. 431-74.000.

Bieffe S.p.A.: *See*—
Baldini, Luciano, 4,161,504, Cl. 264-163.000.

Binder, Georg: *See*—
Franz, Herbert; Wamsler, Reinhold; and Binder, Georg, 4,161,775, Cl. 363-145.000.

Bishop, Allan T.; and Wytruk, Maurice, to Accessories Manufacturers, Ltd. Door panel for mail box unit. 4,161,274, Cl. 232-24.000.

Bishop, Thomas G., to HPM Corporation. Injection molding process control. 4,161,380, Cl. 425-145.000.

Black & Decker Inc.: *See*—
Moores, Robert G., Jr.; and Hopkins, Charles E., Sr., 4,161,242, Cl. 192-34.000.

Black, William L.; Gould, Robert A.; and Wood, Stanley E., to United States of America, Navy. Liquid propellant gun. 4,161,133, Cl. 89-7.000.

Blake, Neil B., to Rank Xerox Limited. Document coding. 4,161,362, Cl. 355-40.000.

Blank, Michael: *See*—
Delarbre, Aime; Boesner, Joachim; and Blank, Michael, 4,161,344, Cl. 308-222.000.

Blaske, Theodore A.; and Yu, Ho Y., to Varo Semiconductor, Inc. Passivated semiconductor device and method of making same. 4,161,744, Cl. 357-59.000.

Blayman, Herbert S. Musical instrument supporting stand. 4,161,131, Cl. 84-453.000.

Blidung, Otto; Tolasch, Gerhard; and Bardenhagen, Dietrich, to Hauni-Werke Korber & Co. KG. Apparatus for processing biscuits or the like. 4,161,094, Cl. 53-493.000.

Blose, Thomas L., to Hydril Company. Dovetail connection for pin and box joints. 4,161,332, Cl. 285-334.000.

Bocharov, Jury N.; Kabanov, Viktor A.; Martynova, Marina A.; Popov, Valery G.; Smetanjuk, Vladimir I.; and Fedorov, Viktor V. Catalyst for (co) polymerization of ethylene, aplha-olefines, conjugated and non-conjugated dienes, a method of preparing same. 4,161,462, Cl. 252-429.00B.

Bochko, Anatoly V.: *See*—
Merzhanov, Alexandr G.; Borovinskaya, Inna P.; Karjuk, Gennady G.; Dubovitsky, Fedor I.; Prokudina, Valentina K.; Ratnikov, Viktor I.; Bochko, Anatoly V.; Moshkovsky, Evgeny I.; Sharivker, Semen J.; and Krizhanovsky, Sergei S., 4,161,512, Cl. 423-440.000.

Bock, Lawrence A.: *See*—
Halle, Reidar; and Bock, Lawrence A., 4,161,485, Cl. 260-448.20R.

Boesner, Joachim: *See*—
Delarbre, Aime; Boesner, Joachim; and Blank, Michael, 4,161,344, Cl. 308-222.000.

Bogacki, Anthony P., to General Electric Company. Meter terminal unit for use in automatic remote meter reading and control system. 4,161,720, Cl. 340-150.000.

BOGE GmbH: *See*—
Brenner, Heinz; and Hamaekers, Arno, 4,161,304, Cl. 248-562.000.

Bogle, Gladys D. Cover secure contour bed sheets. 4,161,044, Cl. 5-494.000.

Bogri, Tibor: *See*—
Abraham, Nedumparambil A.; Bagli, Jehan F.; and Bogri, Tibor, 4,161,608, Cl. 560-121.000.

Bol, Johannes; and Freund, Hans-Ulrich, to Battelle-Institute e.V. Process and apparatus for the automatic examination of eggs for cracks or places of fracture in their shell. 4,161,366, Cl. 356-56.000.

Bolin, Philip C.; Lapen, Robert J.; and Cookson, Alan H., to Westinghouse Electric Corp. Spacer mount for a gas insulated transmission line. 4,161,621, Cl. 174-14.00R.

Bonga, Benno, to Ateliers des Charmilles, S.A. EDM Process and apparatus for overcut machining of a workpiece by an electrode tool. 4,161,641, Cl. 219-69.00M.

Bopp, Richard C., to General Electric Company. Blends of low molecular weight polyalkylene terephthalate resins and organopolysiloxane-polycarbonate block copolymers. 4,161,498, Cl. 525-439.000.

Bormann, Dieter; Merkel Wulf; and Muschaweck, Roman, to Hoechst Aktiengesellschaft. Diuretic and saluretic 5-sulfamoylbenzoic acid derivatives carrying a heterocyclic substituent. 4,161,531, Cl. 424-274.000.

Borner, Dieter; Koerner, Gotz; and Rossmy, Gerd, to Th. Goldschmidt AG. Process for the hydrolysis and condensation of alkyl/aryl-trichlorosilanes. 4,161,487, Cl. 260-448.20R.

Borovinskaya, Inna P.: *See*—
Merzhanov, Alexandr G.; Borovinskaya, Inna P.; Karjuk, Gennady G.; Dubovitsky, Fedor I.; Prokudina, Valentina K.; Ratnikov, Viktor I.; Bochko, Anatoly V.; Moshkovsky, Evgeny I.; Sharivker, Semen J.; and Krizhanovsky, Sergei S., 4,161,512, Cl. 423-440.000.

Bosch, Paul, to Robert Bosch GmbH. Internal-gear fluid-displacement machine with movable separating body. 4,161,372, Cl. 418-126.000.

Boschet, Vittorino, to Grafosol, S.p.A. Sheet supporting drum during development in machines for electrostatically preparing printing matrices. 4,161,358, Cl. 355-3.0DR.

Bosse, Frank, to Windmoller & Holscher. Reinforced webs of film. 4,161,559, Cl. 428-110.000.

Bouchard, Andre C.; and Fraley, Lawrence R., to GTE Sylvania Incorporated. Signal device having prolonged illumination means. 4,161,388, Cl. 431-359.000.

Boulanger, Michelle: *See*—
Beregi, Laszlo; Hugon, Pierre; Duhault, Jacques; and Boulanger, Michelle, 4,161,529, Cl. 424-274.000.

Bourdot, Jean F.: *See*—
Lenne, William; Bourdot, Jean F.; and Rolland, Guy, 4,161,060, Cl. 29-527.100.

Bourne, Henry A., Jr.; Ayers, Louis M.; and Wiseman, Minor R., to Continental Oil Company. Solenoid operated tubing safety valve. 4,161,215, Cl. 166-65.00M.

Boyesen, Eyvind, to Performance Industries, Inc. Two cycle internal combustion engine. 4,161,163, Cl. 123-73.00A.

Bradshaw, Robert S.: *See*—
Hunter, James R.; Lazzarotti, Sebastian J.; and Bradshaw, Robert S., 4,161,244, Cl. 198-347.000.

Brandman, Yigal: *See*—
Cohen, Yitzhak; Brandman, Yigal; and Eckstien, Zvi, 4,161,718, Cl. 340-146.1BA.

Brandt Industries, Inc.: *See*—
Brandt, Robert O., Jr., 4,161,119, Cl. 73-205.00R.

Brandt, Robert O., Jr., to Brandt Industries, Inc. Pneumatic flow measuring system. 4,161,119, Cl. 73-205.00R.

Brashear, Homer J., to Dresser Industries, Inc. Cone retainer for a rotary rock bit. 4,161,343, Cl. 308-8.200.

Brenner, Heinz; and Hamaekers, Arno, to BOGE GmbH. Rubber elastic engine mounts or supports with hydraulic damping, especially for engine suspensions in motor vehicles. 4,161,304, Cl. 248-562.000.

Bridgestone Tire Company Limited: *See*—
Suzuki, Yasuo; Abe, Masaru; and Tezuka, Toshiro, 4,161,203, Cl. 152-361.00R.

Bristol-Myers Company: *See*—
Kaplan, Murray A.; and Granatek, Alphonse P., 4,161,595, Cl. 544-284.000.

Brockl, Walter, to Mafell-Maschinenfabrik Rudolf Mey KG. Nail driver construction. 4,161,272, Cl. 227-131.000.

Brodwin, Bernard. Contoured handle. 4,161,051, Cl. 16-110.00R.

Bromwich, Robert A. C.; Hill, William G.; and Lawrence, Charles M., to Foster Wheeler Energy Corporation. Orbital welding torch. 4,161,640, Cl. 219-60.00A.

Brosow, Jorgen, to Dasy Inter S.A. Hands-free telephone with cascaded attenuators. 4,161,624, Cl. 179-1.0HF.

Bross, Hermann J.: *See*—
Sinn, Gustav; Matner, Martin; and Bross, Hermann J., 4,161,456, Cl. 252-182.000.

Brown, Henry C., to Uni Corporation, The. Pickup truck hoist attachment. 4,161,338, Cl. 298-22.00J.

Brown, Jack, to Singer Company, The. Simplified actuation of two step buttonhole in electronically controlled sewing machine. 4,161,150, Cl. 112-158.00E.

Brown, Norris K.; and Foust, James W., to Envirotech Corporation. Foam and liquor separator. 4,161,395, Cl. 55-178.000.

Brown, William J., to Caterpillar Tractor Co. Vehicle liquid window washer bottle and enclosure. 4,161,287, Cl. 239-284.00R.

Brune, Gerhard; and Lembke, Manfred, to Robert Bosch GmbH. Electro-magnetic valve. 4,161,306, Cl. 251-129.000.

Brunson, Roy J., to Exxon Research & Engineering Co. Liquefaction of calcium-containing subbituminous coals and coals of lower rank. 4,161,440, Cl. 208-8.00R.

Brussels, Nathan E.; and Piasecki, Edwin S., to Solar Energy Systems, Inc. Focussing flat plate solar collector device. 4,161,169, Cl. 126-271.000.

Buchner, Klaus, to Siemens Aktiengesellschaft. Apparatus for examining bodies through scanning by means of ultrasound. 4,161,122, Cl. 73-626.000.

Buck, Charles E.; Johnson, James M.; and Joseph, Paul A., to General Motors Corporation. Magnetostrictive engine detonation sensor. 4,161,665, Cl. 310-26.000.

Buckman, John B.; and Lykes, Robert E., to A. O. Smith Corporation. Flexible mounting of electric motors. 4,161,667, Cl. 310-51.000.

Buday, John M.; Holmes, Lawrence B.; Milenkovic, Veljko; and Stevens, Bernard, to Gard, Inc. Flat article handling system. 4,161,092, Cl. 53-244.000.

Buday, John M., to Gard, Inc. Flat article stacking system. 4,161,095, Cl. 53-527.000.

Bulloch, David K., to Philip A. Hunt Chemical Corp. Solution and method for processing high speed video news film. 4,161,406, Cl. 96-55.000.

Bulteau, Gerard; Acher, Jacques; and Monier, Jean C., to Societe d'Etudes Scientifiques et Industrielles de l'Ile de France. N-(1'-ethyl-2'-oxo-5'-pyrrolidinylmethyl) benzamide compounds and derivatives, method of preparation and pharmaceutical preparations. 4,161,532, Cl. 424-274.000.

Bulten-Kanthal Aktiebolog: *See—*
Eklund, Ingvar A.; and Lejdegard, Sixten H., 4,161,132, Cl. 85-47.000.

Bundy, Gordon L., to Upjohn Company, The. Cycloamides of nitriloprostacyclins. 4,161,584, Cl. 542-421.000.

Burchard, John S.: *See—*
Giffin, James W.; De Santis, Michael A.; and Burchard, John S., 4,161,356, Cl. 354-323.000.

Burke, James R.: *See—*
Kessler, Bernard V.; Hoff, Gerald F.; and Burke, James R., 4,161,702, Cl. 331-94.50H.

Burroughs Corporation: *See—*
Hunter, James R.; Lazzarotti, Sebastian J.; and Bradshaw, Robert S., 4,161,244, Cl. 198-347.000.
Sogo, Marilyn R., 4,161,430, Cl. 204-15.000.
Spencer, David H.; and Becker, Edward A., 4,161,779, Cl. 364-200.000.
Szarewicz, Thomas D.; and Drinkard, John H., Jr., 4,161,654, Cl. 250-221.000.

Burson, David C.; and Larson, Harold D., to Texas Instruments Incorporated. Digital joystick control. 4,161,726, Cl. 340-365.00R.

Burton, Claudia J.: *See—*
Tommaney, Joseph W.; and Burton, Claudia J., 4,161,398, Cl. 75-10.00C.
Tommaney, Joseph W.; and Burton, Claudia J., 4,161,399, Cl. 75-10.00C.

Burton, Richard J. Sanitary hose holder. 4,161,182, Cl. 134-166.00C.

Bush Universal, Inc.: *See—*
Stanton, Leo F., 4,161,048, Cl. 12-146.00S.

Bussard, Charles B., to Monarch Marking Systems, Inc. Pinning machine. 4,161,271, Cl. 227-8.000.

Bustin, Leopold. Safety deck mounting structure. 4,161,232, Cl. 182-92.000.

B.V. Neratoom: *See—*
Klinkert, Gerardus F., 4,161,671, Cl. 313-60.000.

Cagle, Donald D. Fireplace grate. 4,161,168, Cl. 126-164.000.

Cahen, Raymond M., to Labofina S.A. Hydrogenation process. 4,161,483, Cl. 260-409.000.

Calundann, Gordon W., to Celanese Corporation. Polyester of 6-hydroxy-2-naphthoic acid and para-hydroxy benzoic acid capable of readily undergoing melt processing. 4,161,470, Cl. 260-40.00P.

Camag Chemie-Erzeugnisse und Adsorptionstechnik AG: *See—*
Janchen, Dieter, 4,161,508, Cl. 422-100.000.

Camco, Incorporated: *See—*
Pringle, Ronald E., 4,161,219, Cl. 166-324.000.

Campbell, Gerald A., to Eastman Kodak Company. Crosslinkable polymers having vinylsulfonyl groups or styrylsulfonyl groups and their use as hardeners for gelatin. 4,161,407, Cl. 96-114.000.

Campbell, Robert H.; and Wilder, Gene R., to Monsanto Company. Bis-(alkylaminophenoxy)alkanes as antidegradants for rubber. 4,161,474, Cl. 260-45.9QA.

Canon Kabushiki Kaisha: *See—*
Soma, Ikuo; and Takada, Yusaku, 4,161,361, Cl. 355-10.000.

Caouette, Kenneth O.; Fortescue, George H.; Zaman, Mohammad K.; and Oda, Donald J., to Lockheed Aircraft Corporation. Self-powered fiber optic interconnect system. 4,161,650, Cl. 250-199.000.

Cap, Daniel M.; and Lake, William H., to General Electric Company. High pressure metal vapor discharge lamps of improved efficacy. 4,161,672, Cl. 313-220.000.

Caputo, William R.; and Husson, Alan L., to Westinghouse Electric Corp. Elevator system. 4,161,235, Cl. 187-29.00R.

Carbone, Jorge L. Modified piano striking mechanism. 4,161,129, Cl. 84-253.000.

Carbonnel, Henri. Electrically heated spigot for connecting an electromagnetic supplying pump to the inlet of a low pressure casting mould. 4,161,647, Cl. 219-301.000.

Carl Freudenberg, Firma: *See—*
Krug, Hans-Dietrich, 4,161,561, Cl. 428-213.000.

Carlin, Carl-Gustaf; and Skyllermark, Stefan M. B., to Atlas Copco Aktiebolag. Method and apparatus for pretensioning screw joints. 4,161,220, Cl. 173-1.000.

Carlin, Carl-Gustaf; and Skyllermark, Stefan M. B., to Atlas Copco Aktiebolag. Method and apparatus for pretensioning screw joints. 4,161,221, Cl. 173-1.000.

Carlson, Peter J., to Airpax Electronics, Inc. Clamped input common mode rejection amplifier. 4,161,693, Cl. 324-173.000.

Carlsson, Enar I.; Samuelsson, Gustav B. R.; and Lundgren, Bo T., to Aktiebolaget Hassle. Heart active compounds. 4,161,542, Cl. 424-330.000.

Carp, Bess, to Carp, Joseph, a part interest. Combination carrying case and article organizer assembly. 4,161,201, Cl. 150-35.000.

Carp, Joseph: *See—*
Carp, Bess, 4,161,201, Cl. 150-35.000.

Carpenter, David M., to Dresser Industries, Inc. Pressure gauge construction. 4,161,123, Cl. 73-741.000.

Cascade Corporation: *See—*
Seaberg, Richard D., 4,161,256, Cl. 414-620.000.

Casey, Dee O. Composition and method for preparing specimens of micro-organisms for microscopic examination. 4,161,514, Cl. 424-3.000.

Casey, Ross H., to Hewlett-Packard Company. Continuous loop stuffer cartridge having improved Moebius loop tensioning device. 4,161,270, Cl. 226-118.000.

Castleberry, Donald E.; and Waldron, Wesley K., to General Electric Company. Laminated capacitive touch-pad. 4,161,766, Cl. 361-280.000.

Caterpillar Tractor Co.: *See—*
Brown, William J., 4,161,287, Cl. 239-284.00R.
Hicks, George E.; Litherland, John W.; Martin, Arlan G.; and Williams, Lawrence, 4,161,160, Cl. 123-1.00A.
Winzeler, James E., 4,161,126, Cl. 74-674.000.

Caudel, Edward R.: *See—*
Cochran, Michael J.; and Caudel, Edward R., 4,161,697, Cl. 325-330.000.

Caunt, Anthony D.; and Williams, Ian G., to Imperial Chemical Industries Limited. Treatment of transition metal compound. 4,161,461, Cl. 252-429.00B.

Caverzan, Fred G.: *See—*
Gauthier, Ray J.; and Caverzan, Fred G., 4,161,768, Cl. 362-123.000.

Cavitron Corporation: *See—*
Clarke, Robert A.; Kuhl, Peter J.; and Paschke, Richard H., 4,161,420, Cl. 156-73.300.

CBS Inc.: *See—*
Rebold, Jerome I., 4,161,289, Cl. 239-346.000.

Celamerck GmbH & Co. KG.: *See—*
Thomas, Klaus; Ost, Walter; and Curtze, Jurgen, 4,161,528, Cl. 424-273.00R.

Celanese Corporation: *See—*
Calundann, Gordon W., 4,161,470, Cl. 260-40.00P.
Edelman, Robert; Berardinelli, Frank M.; and Wissbrun, Kurt F., 4,161,579, Cl. 525-444.000.
Taylor, Paul D.; Vanderspurt, Thomas H.; and Conciatori, Anthony B., 4,161,616, Cl. 568-862.000.

Centner, Herman. Secondary image reproduction device. 4,161,353, Cl. 351-30.000.

Central Glass Company, Limited: *See—*
Shiraki, Yoshiro; Haraoka, Hiroshi; and Arai, Hiromichi, 4,161,511, Cl. 423-341.000.

Cerprobe Corporation: *See—*
Tarzwell, John W., 4,161,692, Cl. 324-158.00P.

Chang, Clarence D., to Mobil Oil Corporation. Conversion of mixtures of carbon oxides and hydrogen. 4,161,489, Cl. 260-449.00R.

Chemprene, Inc.: *See—*
Stucke, Charles G., 4,161,320, Cl. 277-205.000.

Chen, Nai Y.: *See—*
Audeh, Costandi A.; and Chen, Nai Y., 4,161,442, Cl. 208-11.00R.

Cherian, Gabriel B.; and Scheingold, William S., to AMP Incorporated. Connecting element for surface to surface connectors. 4,161,346, Cl. 339-17.00M.

Chernyshev, Boris A.: *See—*
Korsakov-Bogatkov, Sergei M.; Krakovsky, Boris D.; Nikitkin, Vasily D.; Onosovsky, Evgeny V.; Pronko, Vladimir G.; Stolper, Leonid M.; and Chernyshev, Boris A., 4,161,107, Cl. 62-117.000.

Chervenak, Paul R.: *See—*
Lasoen, Jean J.; and Chervenak, Paul R., 4,161,238, Cl. 188-74.000.

Chevron Research Company: *See—*
Edridge, Alfred J., 4,161,510, Cl. 422-197.000.
Lowe, Warren, 4,161,451, Cl. 252-32.70E.
Suzuki, Shigeto, 4,161,612, Cl. 562-594.000.

Chiba, Tomio: *See—*
Sano, Yoshihiro; Chiba, Tomio; Kudou, Hiroyuki; and Miki, Yoshiteru, 4,161,651, Cl. 250-199.000.

Chinone, Naoki: *See—*
Takeda, Yutaka; Nakamura, Satoshi; Chinone, Naoki; Nakashima, Hisao; and Kurata, Kazuhiro, 4,161,701, Cl. 331-94.50H.

Chloride Group Limited: *See—*
Foulkes, Stanley C.; Moore, Robert; Ratcliffe, James; and Stephenson, James M., 4,161,503, Cl. 264-136.000.

Chugai Denki Kogyo Kabushiki-Kaisha: *See—*
Shibata, Akira, 4,161,403, Cl. 75-173.00A.

Chvatlinsky, Kurt, to Olympia Werke AG. Typing device including a type disc. 4,161,373, Cl. 400-175.000.

Ciaccio, Charles J.; and Rinehart, Harry A., to Ciaccio, Charles J. Radio controlled fishing apparatus. 4,161,077, Cl. 43-26.100.

Ciba-Geigy AG: *See—*
Batzer, Hans; Habermeier, Jurgen; and Porret, Daniel, 4,161,594, Cl. 544-302.000.

Ciba-Geigy Corporation: *See—*
Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Meyer, Willy, 4,161,536, Cl. 424-304.000.
Evans, Samuel; and Rasberger, Michael, 4,161,592, Cl. 544-198.000.

Green, George E.; and Losert, Ewald, 4,161,588, Cl. 542-432.000.
Habermeier, Jurgen, 4,161,603, Cl. 548-305.000.
Haug, Theobald; Keifer, Jurg; Ruf, Peter; and Schmitter, Andre, 4,161,580, Cl. 528-322.000.
Heusler, Karl; and Woodward, Robert B., 4,161,476, Cl. 260-306.70C.
Koella, Werner P., 4,161,530, Cl. 424-274.000.
Meyer, Willy; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,161,535, Cl. 424-304.000.
Mueller, Karl F., 4,161,590, Cl. 544-159.000.
Mueller, Karl F., 4,161,602, Cl. 546-335.000.
Schweizer, Ernst, 4,161,534, Cl. 424-300.000.
Spivack, John D.; and Dexter, Martin, 4,161,473, Cl. 260-45.85S.

Clarion Co., Ltd.: *See—*
Kanai, Takao; and Mori, Yujiro, 4,161,707, Cl. 334-7.000.

Clarke, Robert A.; Kuhl, Peter J.; and Paschke, Richard H., to Cavitron Corporation. Ultrasonic method for manufacturing brassiere tapes. 4,161,420, Cl. 156-73.300.

Clinch, Colin W. F.; Harley, David N.; and Palmer, John P., to ITW Limited. Valves for vehicle heating systems. 4,161,307, Cl. 251-206.000.

Cloarec, Jean-Claude, to WABCO Westinghouse. Equipment for the detection of rotation parameters in particular for a wheel-velocity sensor. 4,161,120, Cl. 73-494.000.

Cloutier, Charles C. Patch for ship hulls. 4,161,155, Cl. 114-227.000.

Coates, Clarence A., Jr.; and Weaver, Max A., to Eastman Kodak Company. Methine dyes from 1-[2-[(2-benzothiazolyl)thio]alkyl]-1,2,3,4-tetrahydro-2,2,4,7-tetramethylquinoline compounds. 4,161,601, Cl. 546-176.000.

Cochran, Michael J.; and Caudel, Edward R., to Texas Instruments Incorporated. Automatically clarifying radio receiver. 4,161,697, Cl. 325-330.000.

Cohen, Michael R.: *See—*
Osborne, Melville W.; and Cohen, Michael R., 4,161,520, Cl. 424-115.000.

Cohen, Yitzhak; Brandman, Yigal; and Eckstien, Zvi, to Motorola Israel Ltd. Supervisory control system. 4,161,718, Cl. 340-146.1BA.

Coillet, Dudley W. Process for the desalination of salt containing water. 4,161,445, Cl. 210-23.00H.

Coillet, Dudley W. Process for the treatment of ground water. 4,161,446, Cl. 210-23.00H.

Collet, Marnix G.; Salters, Roelof H. W.; and Koomen, Joannes J. M., to U.S. Philips Corporation. Semiconductor memory device. 4,161,741, Cl. 357-41.000.

Color Custom Compounding, Inc.: *See—*
Danko, Edward M., 4,161,506, Cl. 264-174.000.

Colt Industries Operating Corp.: *See—*
Larson, William C., 4,161,241, Cl. 188-298.000.

Colvin, Christopher R. Ski board. 4,161,324, Cl. 280-21.00A.

Combustion Engineering, Inc.: *See—*
Warren, Kenneth W.; and Prestridge, Floyd L., 4,161,439, Cl. 204-306.000.

Commissariat a l'Energie Atomique: *See—*
Freychet, Aime; and Gouzy, Andre, 4,161,193, Cl. 138-103.000.

Compagnie Generale d'Electricite: *See—*
Tardy, Andre, 4,161,347, Cl. 350-96.210.

Conciatori, Anthony B.: *See—*
Taylor, Paul D.; Vanderspurt, Thomas H.; and Conciatori, Anthony B., 4,161,616, Cl. 568-862.000.

Conco Medical Co., Inc.: *See—*
Bentele, Max, 4,161,175, Cl. 128-87.00A.

Conklin, Robert M.; and Human, Arthur T., to Holmes Protection, Inc. Alarm device having code verification system. 4,161,721, Cl. 340-168.00B.

Continental Oil Company: *See—*
Bourne, Henry A., Jr.; Ayers, Louis M.; and Wiseman, Minor R., 4,161,215, Cl. 166-65.00M.

Contraves AG: *See—*
Feier, Markus, 4,161,690, Cl. 324-71.0CP.

Conwed Corporation: *See—*
Benasutti, Roger; and Koenig, Thomas A., 4,161,767, Cl. 362-33.000.

Cook Electric Company: *See—*
Scheithauer, Eric A., 4,161,762, Cl. 361-124.000.

Cookson, Alan H.: *See—*
Bolin, Philip C.; Lapen, Robert J.; and Cookson, Alan H., 4,161,621, Cl. 174-14.00R.

Cooper, Abraham J. Investment casting apparatus. 4,161,208, Cl. 164-244.000.

Copal Company Limited: *See—*
Ishiguro, Yasuo; Wakazono, Kenji; and Saito, Toshihisa, 4,161,764, Cl. 361-187.000.

Cope, Louis T., to H&T Enterprises, Inc. Method and apparatus for reducing the temperature of a fluid. 4,161,108, Cl. 62-306.000.

Cor Tech Research Ltd.: *See—*
Vasishth, Ramesh C., 4,161,576, Cl. 528-139.000.

Corrugated Development, Inc.: *See—*
Kirkpatrick, Alan D., 4,161,269, Cl. 226-92.000.

Corvette, William B. Portable battery charger. 4,161,682, Cl. 320-2.000.

Cotic, Dennis J.; Hoffman, David M.; Shelley, Peter S.; and Zech, Laurel J., to General Electric Company. Multi-cell detector using printed circuit board. 4,161,655, Cl. 250-385.000.

Cottingham, Hugh V.; and Scrocco, Joseph, to BHN, Inc. Adjustable prosthetic limb. 4,161,042, Cl. 3-17.00R.

Courier de Mere, Henri E., to BICOSA Societe de Recherches. Detection devices especially for the detection of flames. 4,161,387, Cl. 431-74.000.

Cowherd, Frank G., III; and Theiling, Louis F., Jr., to Union Carbide Corporation. Process for preparing carbamoyloxy acrylates. 4,161,596, Cl. 544-388.000.

Cramer, Richard D., to Du Pont de Nemours, E. I., and Company. Synthesis of carboxylic acid esters. 4,161,609, Cl. 560-215.000.

Creative Dispensing Systems, Inc.: *See—*
McKinney, James C., 4,161,288, Cl. 239-333.000.

Crestas, Hans; and Zimmerman, Edwin, to U.S. Philips Corporation. Blood pressure gauge. 4,161,173, Cl. 128-672.000.

Crivello, James V., to General Electric Company. Method of cationally polymerizing oxirane free materials with group VIa onium salts. 4,161,405, Cl. 96-35.100.

Crivello, James V., to General Electric Company. Photoinitiators. 4,161,478, Cl. 260-327.00B.

Cross, Eric, to William Cotton Limited. Latchguards. 4,161,109, Cl. 66-88.000.

Cubeta, Angelo. Elongated flexible level for use as transit. 4,161,069, Cl. 33-367.000.

Cuiper, Glen H.; and Ames, Thomas J., to FMC Corporation. Method and apparatus for completing diverless subsea flowline connections. 4,161,367, Cl. 405-169.000.

Cummins Engine Company, Inc.: *See—*
Belush, Richard; and Wade, James A., 4,161,165, Cl. 123-193.00P.

Currey, Norman S.: *See—*
Beardsley, Richard G.; and Currey, Norman S., 4,161,301, Cl. 244-137.00R.

Curtze, Jurgen: *See—*
Thomas, Klaus; Ost, Walter; and Curtze, Jurgen, 4,161,528, Cl. 424-273.00R.

Cusano, Carmen M.; Rubin, Isaac D.; Jones, Ronald E.; and Vartanian, Paul F., to Texaco Inc. Nitrogen containing polymers prepared from methacrylic esters as carburetor detergents and corrosion inhibitors. 4,161,392, Cl. 44-62.000.

Cushing, David E.; and Tague, Steven A., to Honeywell Information Systems, Inc. Microprogrammable floating point arithmetic unit capable of performing arithmetic operations on long and short operands. 4,161,784, Cl. 364-748.000.

Cybernet Electronic Corporation: *See—*
Kakigi, Takao, 4,161,695, Cl. 325-17.000.

Dahod, Ashraf M.: *See—*
Hopkins, Gregory T.; Dahod, Ashraf M.; Demarines, Victor A.; Meisner, Norman B.; and Willard, David G., 4,161,786, Cl. 364-900.000.

Dai Nippon Toryo Co., Ltd.: *See—*
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,161,457, Cl. 252-301.40R.

Daicel Ltd.: *See—*
Kojima, Katumi, 4,161,447, Cl. 210-23.00H.

Dainippon Jochugiki Kabushiki Kaisha: *See—*
Katsuda, Yoshio; Nakajima, Minoru; and Fujita, Toshio, 4,161,537, Cl. 424-304.000.

Dalferth, Hans H.; and Mauer, Dieter A. G. Attachment device for securing structural parts to a chain. 4,161,100, Cl. 59-93.000.

Daly, Thomas C.: *See—*
Groves, Stanley E.; Schriber, Gene A.; Spinks, Brian M.; Baker, Richard M.; Daly, Thomas C.; and Means, Rodney J., 4,161,787, Cl. 364-900.000.

Dangeleit, Siegfried; and Kothe, Dieter, to DEMAG Aktiengesellschaft. Apparatus for handling the starting strand of a metal strand casting plant. 4,161,209, Cl. 164-446.000.

D'Angelo, Severino: *See—*
Fegraus, Clark E.; and D'Angelo, Severino, 4,161,116, Cl. 73-117.000.

Danko, Edward M., to Color Custom Compounding, Inc. Method of forming finishing welts. 4,161,506, Cl. 264-174.000.

Daravingas, George V.: *See—*
Wagenknecht, Austin C., deceased; Daravingas, George V.; and Koski, William E., 4,161,517, Cl. 424-48.000.

Darrington, Franklin D.: *See—*
Akin, Cavit; and Darrington, Franklin D., 4,161,546, Cl. 426-104.000.

Dashow, Russell N., to RND Company. Web product with marker and method of manufacture. 4,161,249, Cl. 206-459.000.

Dasy Inter S.A.: *See—*
Brosow, Jorgen, 4,161,624, Cl. 179-1.0HF.

Davenport, Bobby E.: *See—*
Nix, Edwin L.; and Davenport, Bobby E., 4,161,335, Cl. 296-39.00R.

Davis, Daryl. Winding machine. 4,161,298, Cl. 242-67.10R.

Davis, Donald T.: *See—*
Lytle, R. Jeffrey; Lager, Darrel L.; Laine, Edwin F.; and Davis, Donald T., 4,161,687, Cl. 324-6.000.

Davis, John E.; and Davis, Pauls, to BASF Wyandotte Corporation. Process for the preparation of graft polymer dispersions employing liquid free radical catalysts. 4,161,468, Cl. 260-30.40R.

Davis, Kirk E., to Lubrizol Corporation, The. Sulfurized Mannich condensation products and lubricants containing same. 4,161,475, Cl. 260-132.000.

Davis, Pauls: *See—*
Davis, John E.; and Davis, Pauls, 4,161,468, Cl. 260-30.40R.

Davison, Thomas W.: *See—*
Suzuki, Fred K.; and Davison, Thomas W., 4,161,557, Cl. 428-1.000.

Dayco Corporation: *See—*
Ross, Donald E., 4,161,330, Cl. 283-55.000.

DeBernardo, Silvano: *See—*
Weigele, Manfred; and DeBernardo, Silvano, 4,161,582, Cl. 536-1.000.

Decker, Elmer L.; and Moon, James, to Decker Engineering Corporation. Hydraulic-electronic load sensing device for load indicating apparatus. 4,161,117, Cl. 73-141.00R.

Decker Engineering Corporation: *See—*
Decker, Elmer L.; and Moon, James, 4,161,117, Cl. 73-141.00R.

DeDietrich (USA), Inc.: *See—*
Schlosberg, Seymour; and Lerman, Michael J., 4,161,689, Cl. 324-54.000.

Degnan, William G., to United Technologies Corporation. Aircraft control system component with improved ballistic tolerance. 4,161,125, Cl. 74-469.000.

Delarbre, Aime; Boesner, Joachim; and Blank, Michael, to Kugelfischer Georg Schafer & Co. Method of and means for rotatably supporting a load. 4,161,344, Cl. 308-222.000.

DEMAG Aktiengesellschaft: *See—*
Dangeleit, Siegfried; and Kothe, Dieter, 4,161,209, Cl. 164-446.000.

Demarines, Victor A.: *See—*
Hopkins, Gregory T.; Dahod, Ashraf M.; Demarines, Victor A.; Meisner, Norman B.; and Willard, David G., 4,161,786, Cl. 364-900.000.

Denki Onkyo Co., Ltd.: *See—*
Onoue, Shoji, 4,161,776, Cl. 363-146.000.

De Nora, Oronzio; Nidola, Antonio; and Spaziante, Placido M., to Oronzio De Nora Impianti Elettrochimici S.p.A. Decomposition of alkali metal amalgams. 4,161,433, Cl. 204-98.000.

De Nora, Oronzio; and De Nora, Vittorio, to Oronzio De Nora Impianti Elettrochimici S.p.A. Electrolysis cell. 4,161,438, Cl. 204-266.000.

De Nora, Vittorio: *See—*
De Nora, Oronzio; and De Nora, Vittorio, 4,161,438, Cl. 204-266.000.

Denton Industries, Inc.: *See—*
Pellico, Michael A., 4,161,410, Cl. 106-35.000.

DePinna, George L., to Goodren Products Corp. Three-dimensional product marker. 4,161,074, Cl. 40-124.100.

De Rossi, Danilo: *See—*
Bedini, Remo; and De Rossi, Danilo, 4,161,653, Cl. 250-215.000.

De Santis, Michael A.: *See—*
Giffin, James W.; De Santis, Michael A.; and Burchard, John S., 4,161,356, Cl. 354-323.000.

DeSimone, Salvatore: *See—*
Barouh, Victor; Rottmann, George; and DeSimone, Salvatore, 4,161,551, Cl. 428-539.000.

Detz, Clifford M., to Union Carbide Corporation. Method for stabilizing acetylene. 4,161,495, Cl. 585-4.000.

Deutsche Babcock Aktiengesellschaft: *See—*
Beelmann, Richard; Kerstges, Johannes; and Mertens, Paul, 4,161,293, Cl. 241-56.000.
Hennecke, Hermann; Mertens, Paul; and Krecher, Josef, 4,161,295, Cl. 241-66.000.
Lautenschlager, Friedrich W.; and Hennecke, Hermann, 4,161,294, Cl. 241-56.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Kleemann, Axel; Klenk, Herbert; and Schwarze, Werner, 4,161,491, Cl. 260-557.00R.

Deutsche Texaco Aktiengesellschaft: *See—*
Humbert, Heiko; and Wegner, Hans-Georg, 4,161,496, Cl. 585-836.000.

De Vittori, Gianfranco. Flagpole particularly for indicating goals in skiing competitions. 4,161,723, Cl. 340-323.00R.

De Volder, Noel J.: *See—*
Gilliams, Yvan K.; and De Volder, Noel J., 4,161,453, Cl. 252-62.10L.

Dewey, Craig D.: *See—*
Raugulis, Indulis E.; Dewey, Craig D.; and Gundrum, Richard H., 4,161,144, Cl. 105-163.00R.

Dexter, Martin: *See—*
Spivack, John D.; and Dexter, Martin, 4,161,473, Cl. 260-45.85S.

Dharia, Prabodh M.: *See—*
Parikh, Bipin D.; Patnaik, Haresh C.; Patel, Bhagubhai K.; Dharia, Prabodh M.; Kurtz, John J.; Jenkins, Alfred D.; and Mahajan, Prakash Y., 4,161,719, Cl. 340-147.0SY.

Dickey, Russell F. Practice device for basketball. 4,161,313, Cl. 273-1.50A.

Dilgren, Richard E.; and Owens, Kenneth B., to Shell Oil Company. Hot water foam oil production process. 4,161,217, Cl. 166-252.000.

Dill, Terry A., to Jefferson Industries Company, The. Material flow stoppage detector device. 4,161,677, Cl. 318-482.000.

Dishal, Milton; and Van Etten, James P., to International Telephone and Telegraph Corporation. Pulse transmitter reference networks supplying ECD capability. 4,161,696, Cl. 325-163.000.

Dorlars, Alfons: *See—*
Klauke, Erich; Kysela, Ernst; and Dorlars, Alfons, 4,161,593, Cl. 544-217.000.

Dow Chemical Company, The: *See—*
Gunsher, Jeffrey A.; Garner, Joseph L.; and Miller, Conrad O. M., 4,161,573, Cl. 526-64.000.
Stallcup, Odie T., 4,161,539, Cl. 424-317.000.
Ward, John K.; and Gardner, Johnny B., 4,161,554, Cl. 427-239.000.
Wessling, Ritchie A.; and Gurnee, Edward F., 4,161,502, Cl. 264-119.000.

Doyen, June E.: *See—*
Sell, Nancy J.; and Doyen, June E., 4,161,411, Cl. 106-100.000.

Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Meyer, Willy, to Ciba-Geigy Corporation. Pesticidal aliphatic carboxylates. 4,161,536, Cl. 424-304.000.

Drabek, Jozef: *See—*
Meyer, Willy; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,161,535, Cl. 424-304.000.

Dracon Industries: *See—*
Mason, John R.; and Gregson, Donald L., 4,161,061, Cl. 29-566.400.

Draese, Rudiger: *See—*
Kotzsch, Hans-Joachim; Draese, Rudiger; and Vahlensieck, Hans-Joachim, 4,161,486, Cl. 260-448.20E.

Dragerwerk Aktiengesellschaft: *See—*
Fleckenstein, Wolfgang, 4,161,437, Cl. 204-195.00P.

Drayer, Sanford A.; and Wampler, Gordon D. Insulator assembly having novel feedthrough portion. 4,161,622, Cl. 174-152.00R.

Dresser Industries, Inc.: *See—*
Brashear, Homer J., 4,161,343, Cl. 308-8.200.
Carpenter, David M., 4,161,123, Cl. 73-741.000.
Mitchell, Howard E., 4,161,225, Cl. 175-374.000.

Drinkard, John H., Jr.: *See—*
Szarewicz, Thomas D.; and Drinkard, John H., Jr., 4,161,654, Cl. 250-221.000.

Drummond, Thane M., to General Electric Company. Control system for and method of zero error automatic calibration of gas turbine temperature control parameters. 4,161,101, Cl. 60-39.030.

Dubil, James F.; Falcoz, Alain M.; Glaise, Rene J.; Jacquart, Christian A.; Leighton, Howard N.; Riso, Vladimir; and Wilfinger, Raymond J., to International Business Machines Corporation. Universal transversal filter chip. 4,161,706, Cl. 333-165.000.

Dubovitsky, Fedor I.: *See—*
Merzhanov, Alexandr G.; Borovinskaya, Inna P.; Karjuk, Gennady G.; Dubovitsky, Fedor I.; Prokudina, Valentina K.; Ratnikov, Viktor I.; Bochko, Anatoly V.; Moshkovsky, Evgeny I.; Sharivker, Semen J.; and Krizhanovsky, Sergei S., 4,161,512, Cl. 423-440.000.

Duffy, Thomas E.; and Rohy, David A., to International Harvester Company. Methods of and apparatus for energy storage and utilization. 4,161,211, Cl. 165-1.000.

Duhault, Jacques: *See—*
Beregi, Laszlo; Hugon, Pierre; Duhault, Jacques; and Boulanger, Michelle, 4,161,529, Cl. 424-274.000.

Dunham, Philip N., to P.R.K., Inc. Method and device for repairing damaged screw propellers. 4,161,056, Cl. 29-402.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bellina, Russell F., 4,161,591, Cl. 544-164.000.
Cramer, Richard D., 4,161,609, Cl. 560-215.000.
Frazer, August H., 4,161,607, Cl. 560-65.000.
Kassal, Robert J., 4,161,471, Cl. 260-40.00R.
Schleinitz, Henry M.; and Stephan, Paul G., 4,161,500, Cl. 264-1.000.

Dwinell, William S.: *See—*
Frosch, Robert A.; and Dwinell, William S., 4,161,661, Cl. 307-119.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Kotzsch, Hans-Joachim; Draese, Rudiger; and Vahlensieck, Hans-Joachim, 4,161,486, Cl. 260-448.20E.

E. G. O. Elektro-Geraete Blanc und Fischer: *See—*
Goessler, Gerhard, 4,161,648, Cl. 219-464.000.

Eastman Kodak Company: *See—*
Campbell, Gerald A., 4,161,407, Cl. 96-114.000.
Coates, Clarence A., Jr.; and Weaver, Max A., 4,161,601, Cl. 546-176.000.

Eastside Machine & Welding, Inc.: *See—*
Appleman, Theodore C., 4,161,555, Cl. 427-333.000.

Eaton Allen Corp.: *See—*
Barouh, Victor; Rottmann, George; and DeSimone, Salvatore, 4,161,551, Cl. 428-539.000.

Ebigt, Joachim: *See—*
Hermann, Hans D.; and Ebigt, Joachim, 4,161,565, Cl. 428-437.000.

Eckhardt, Friedhelm; Raffenberg, Wolfgang; and Klein, Axel, to U.S. Philips Corporation. Card feeding mechanism. 4,161,312, Cl. 271-3.000.

Eckstien, Zvi: *See—*
Cohen, Yitzhak; Brandman, Yigal; and Eckstien, Zvi, 4,161,718, Cl. 340-146.1BA.

Edelman, Robert; Berardinelli, Frank M.; and Wissbrun, Kurt F., to Celanese Corporation. Extrusion grade polyethylene terephthalate. 4,161,579, Cl. 525-444.000.

Edgar Pickering (Blackburn) Limited: *See—*
Lund, Kenneth, 4,161,147, Cl. 112-79.00R.

Edridge, Alfred J., to Chevron Research Company. Reforming furnace having ceramic-coated tubes. 4,161,510, Cl. 422-197.000.

Edwards, Donald W.; and Wells, Luther R., Jr., to Southern Explosives Corporation. Blasting booster and methods. 4,161,142, Cl. 102-23.000.

Efros, Boris. Bicycle. 4,161,328, Cl. 280-290.000.

Ekeborg, Bo-Gunnar; and Lofgren, Stig-Gunnar, to Mo och Domsjo Aktiebolag. Vehicles having reduced tilting of the superstructure thereof relative to the wheel axle support therefor. 4,161,322, Cl. 280-6.00R.

Eklund, Ingvar A.; and Lejdegard, Sixten H., to Bulten-Kanthal Aktiebolog. Self-tapping screw. 4,161,132, Cl. 85-47.000.
Electric Power Research Institute, Inc.: *See—*
Harris, Lawrence A., 4,161,715, Cl. 340-16.00R.
Electronic Memories & Magnetics Corporation: *See—*
Leach, George S., 4,161,791, Cl. 365-222.000.
Elkem-Spigerverket A/S: *See—*
Skretting, Hans, 4,161,501, Cl. 264-66.000.
Elliott, Billy N., to Zimmerman Metals, Inc. Illuminated hand rail. 4,161,769, Cl. 362-146.000.
Elster, Charles H.; and Gibs, Gabriel J., to Lonza Inc. Process for making 1-hydroxyethyl-2-undecyl-2-imidazoline. 4,161,604, Cl. 548-352.000.
Engel, Michael R.: *See—*
Wen, Richard Y.; LaFleur, Linda L.; Engel, Michael R.; and Lucas, Anthony J., 4,161,518, Cl. 424-52.000.
Enomoto, Takamichi; and Sakuma, Seiiti, to Ricoh Co., Ltd. Photosensitive material for use in electrophotography with a poly alkyl or benzyl glutamate. 4,161,404, Cl. 96-1.50R.
Envirotech Corporation: *See—*
Brown, Norris K.; and Foust, James W., 4,161,395, Cl. 55-178.000.
Erb, Elisha W.; and Resch, Darrel R. Pneumatic nebulizer and method. 4,161,281, Cl. 239-8.000.
Erb, Elisha W.; and Resch, Darrel R. Microcapillary nebulizer and method. 4,161,282, Cl. 239-8.000.
Erben, Ludwig, to Trutzschler GmbH & Co. KG. Method and apparatus for making a uniform, continuous sliver. 4,161,052, Cl. 19-240.000.
Erickson, John W.; and Soriano, Peter A., to Kobe, Inc. Combined separator and pump with dirty phase concentrator. 4,161,448, Cl. 210-258.000.
Erlichman, Irving, to Polaroid Corporation. Printer for producing print of an electronically recorded image. 4,161,749, Cl. 358-75.000.
Erni & Co., Elektroindustrie: *See—*
Maurer, Urs, 4,161,770, Cl. 362-309.000.
Essilor International (Cie Generale d'Optique): *See—*
Lenne, William; Bourdot, Jean F.; and Rolland, Guy, 4,161,060, Cl. 29-527.100.
Ettinger, Robert H., to General Electric Company. Vacuum interrupter latch release mechanism. 4,161,638, Cl. 200-153.0SC.
Eubanks, Ann S.; and Steinkraus, Celeste M. Thread and yarn organizer. 4,161,075, Cl. 40-309.000.
Eutectic Corporation: *See—*
Fluckiger, Jean L.; and Wasserman, Rene, 4,161,207, Cl. 164-80.000.
Evancho, Joseph W.: *See—*
Vernam, William D.; and Evancho, Joseph W., 4,161,553, Cl. 428-654.000.
Evans, Samuel; and Rasberger, Michael, to Ciba-Geigy Corporation. Piperidinyl-s-triazines. 4,161,592, Cl. 544-198.000.
Every, William A.: *See—*
Paspek, Stephen C., Jr.; and Every, William A., 4,161,613, Cl. 562-600.000.
EVG Entwicklungs- und Verwertungs-Gesellschaft mbH.: *See—*
Ritter, Klaus; Ritter, Gerhard; Ritter, Josef; Pohacker, Josef; and Jahrbacher, Gert, 4,161,110, Cl. 72-7.000.
Ewen, Woodrow W., II: *See—*
Rudolph, Louis R.; and Ewen, Woodrow W., II, 4,161,780, Cl. 364-434.000.
Exxon Production Research Company: *See—*
Mifsud, Joseph F., 4,161,229, Cl. 181-114.000.
Exxon Research & Engineering Co.: *See—*
Baiel, James J.; and Tsonopoulos, Constantine, 4,161,429, Cl. 203-18.000.
Brunson, Roy J., 4,161,440, Cl. 208-8.00R.
Faber, Peter, to Rheinisch-Westfalisches Elektrizitatswerk Aktiengesellschaft. Composite electrode for storage batteries, accumulators and the like. 4,161,569, Cl. 429-234.000.
Fabrig, Paul, to Womako-Maschinenkonstruktionen GmbH. Method and apparatus for making spiral binder note books. 4,161,196, Cl. 140-92.400.
Falcoz, Alain M.: *See—*
Dubil, James F.; Falcoz, Alain M.; Glaise, Rene J.; Jacquart, Christian A.; Leighton, Howard N.; Riso, Vladimir; and Wilfinger, Raymond J., 4,161,706, Cl. 333-165.000.
Fandrei, Norman P.: *See—*
Felix, Larry L.; and Fandrei, Norman P., 4,161,352, Cl. 350-301.000.
Farooq, Saleem: *See—*
Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Meyer, Willy, 4,161,536, Cl. 424-304.000.
Meyer, Willy; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,161,535, Cl. 424-304.000.
Fasse, Mark E.; and Glesmann, Herbert C. Automatic steering mechanism. 4,161,143, Cl. 104-244.100.
Fedorov, Viktor V.: *See—*
Bocharov, Jury N.; Kabanov, Viktor A.; Martynova, Marina A.; Popov, Valery G.; Smetanjuk, Vladimir I.; and Fedorov, Viktor V., 4,161,462, Cl. 252-429.00B.
Fegraus, Clark E.; and D'Angelo, Severino, to Automotive Environmental Systems, Inc. Inertia and road load simulation for vehicle testing. 4,161,116, Cl. 73-117.000.
Feier, Markus, to Contraves AG. Method and apparatus for particle analysis. 4,161,690, Cl. 324-71.0CP.
Feinberg, Robert S.; and Selick, David A. Method of and means for preserving tennis balls or the like. 4,161,247, Cl. 206-315.00B.
Felix, Larry L.; and Fandrei, Norman P. Vehicle mounted surveillance apparatus. 4,161,352, Cl. 350-301.000.
Ferranti Limited: *See—*
Kane, Jeffrey, 4,161,742, Cl. 357-48.000.
FIAT Societa per Azioni: *See—*
Bedini, Remo; and De Rossi, Danilo, 4,161,653, Cl. 250-215.000.
Fisons Limited: *See—*
Bell, John H., 4,161,516, Cl. 424-14.000.
Flavell, Evan R.: *See—*
Ross, Albert; Garrett, Richard H.; Gordon, Hayden S.; and Flavell, Evan R., 4,161,337, Cl. 297-230.000.
Fleckenstein, Wolfgang, to Dragerwerk Aktiengesellschaft. Measuring probe for the polarographic determination of partial gas pressures. 4,161,437, Cl. 204-195.00P.
Fleskens, Ludovicus A. H.: *See—*
Alisic, Slobodan; Hamer, Rene H.; and Fleskens, Ludovicus A. H., 4,161,676, Cl. 315-395.000.
Flores, Raymond. Sealing mechanism for a liquid floor drain. 4,161,043, Cl. 4-292.000.
Floroff, Peter. Fuel metering device for internal combustion engine. 4,161,499, Cl. 261-36.00A.
Fluckiger, Jean L.; and Wasserman, Rene, to Eutectic Corporation. Production of carbide laden consumables in a graphite mold. 4,161,207, Cl. 164-80.000.
FMC Corporation: *See—*
Cuiper, Glen H.; and Ames, Thomas J., 4,161,367, Cl. 405-169.000.
Haley, Frank P., 4,161,199, Cl. 141-387.000.
Focke, Heinz, to Focke & Pfuhl. Method and apparatus for wrapping groups of cigarettes. 4,161,093, Cl. 53-228.000.
Focke & Pfuhl: *See—*
Focke, Heinz, 4,161,093, Cl. 53-228.000.
Fontanille, Michel: *See—*
Sigwalt, Pierre; Guyot, Patrick; and Fontanille, Michel, 4,161,494, Cl. 260-665.00R.
Food Technology Products: *See—*
Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergios, 4,161,543, Cl. 426-2.000.
Forberg, Sevald; and Olsson, Per-Inge. Method of preparing titanates suitable as ion-exchange material. 4,161,513, Cl. 423-598.000.
Forenade Fabriksverken: *See—*
Svensson, Lars G.; Karlstedt, Gustav; Tisell, Claes; and Thorstensson, Yngve, 4,161,228, Cl. 180-282.000.
Fortescue, George H.: *See—*
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Foster Wheeler Energy Corporation: *See—*
Bromwich, Robert A. C.; Hill, William G.; and Lawrence, Charles M., 4,161,640, Cl. 219-60.00A.
Foulkes, Stanley C.; Moore, Robert; Ratcliffe, James; and Stephenson, James M., to Chloride Group Limited. Method of making multitubular sheaths. 4,161,503, Cl. 264-136.000.
Foust, James W.: *See—*
Brown, Norris K.; and Foust, James W., 4,161,395, Cl. 55-178.000.
Fraley, Lawrence R.: *See—*
Bouchard, Andre C.; and Fraley, Lawrence R., 4,161,388, Cl. 431-359.000.
Francois, Edgar, to Uniroyal, Inc. Method of fastening to a belt. 4,161,059, Cl. 29-432.000.
Frania, Josef: *See—*
Stossberg, Udo; Frania, Josef; Meyer, Hans F.; and Kneuttinger, Alfrons, 4,161,134, Cl. 91-219.000.
Franz, Herbert; Wamsler, Reinhold; and Binder, Georg, to Robert Bosch GmbH. Rectifier unit for provision in an alternator. 4,161,775, Cl. 363-145.000.
Frater, James J., to Menasha Corporation. Security container. 4,161,261, Cl. 220-337.000.
Frazer, August H., to Du Pont de Nemours, E. I., and Company. Thermally stable, rigid bisphenols. 4,161,607, Cl. 560-65.000.
Fresard, Marcel; and Jimenez, Antonio, to Mefina S.A. Sewing machine. 4,161,151, Cl. 112-217.100.
Freund, Hans-Ulrich: *See—*
Bol, Johannes; and Freund, Hans-Ulrich, 4,161,366, Cl. 356-56.000.
Frey, Richard H., to Microwave Semiconductor Corp. High frequency power transistor having reduced interconnection inductance and thermal resistance. 4,161,740, Cl. 357-36.000.
Freychet, Aime; and Gouzy, Andre, to Commissariat a l'Energie Atomique. Open ducts designed for ready disassembly and re-use. 4,161,193, Cl. 138-103.000.
Friberg, Vincent P.; and Kruczek, Chester R., to General Instrument Corporation. Electronic tuning system with digital band selection. 4,161,708, Cl. 334-15.000.
Frosch, Robert A.; and Dwinell, William S. System for automatically switching transformer coupled lines. 4,161,661, Cl. 307-119.000.
Fuchs, Heinz, to Intermedicat GmbH. Catheter attachment. 4,161,177, Cl. 128-214.400.
Fuhrhop, Ronald E., to Union Carbide Corporation. Method and apparatus for producing a post-mixed, stabilized scarfing pre-heating flame. 4,161,413, Cl. 148-9.500.
Fuji Photo Film Co., Ltd.: *See—*
Hanai, Yoshimitsu; Hirata, Makio; and Kogane, Mikio, 4,161,364, Cl. 355-72.000.
Fujikata, Kenji; Yokozawa, Norio; and Shibayama, Akinori, to Hitachi, Ltd.; and Nippon Telegraph and Telephone Public Corporation. Analog comparator. 4,161,700, Cl. 328-147.000.

Fujikura Cable Works, Ltd., The: *See—*
Agatsuma, Ko; Koyama, Kenichi; Todoriki, Itaru; Yamaguchi, Tetsuo; Kohno, Osamu; and Saito, Takashi, 4,161,062, Cl. 29-599.000.

Fujisawa, Hiroshi: *See—*
Ishizuka, Kenzo; Fujisawa, Hiroshi; and Noda, Etsunosuke, 4,161,527, Cl. 424-246.000.

Fujita, Toshio: *See—*
Katsuda, Yoshio; Nakajima, Minoru; and Fujita, Toshio, 4,161,537, Cl. 424-304.000.

Fujiwara, Kunio: *See—*
Shiraishi, Satoshi; Fujiwara, Kunio; and Kurosaki, Shiro, 4,161,505, Cl. 264-171.000.

Furukawa, Hisao: *See—*
Yonezawa, Kazuya; Furukawa, Hisao; and Azuma, Masaaki, 4,161,572, Cl. 525-100.000.

Futaba Denshi Kogyo K. K.: *See—*
Morimoto, Kiyoshi; Utamura, Yukihiko; and Takagi, Toshinori, 4,161,418, Cl. 148-175.000.

Fuzisawa, Noriyoshi; and Hattori, Kenichi, to Kao Soap Co., Ltd. Method for vessel cultivation of *Lentinus edodes*. 4,161,083, Cl. 47-1.100.

G. D. Searle & Co.: *See—*
Pappo, Raphael; and Garland, Robert B., 4,161,480, Cl. 260-365.000.

Gaber, Steven L. Skateboard. 4,161,326, Cl. 280-87.04A.

Gabry, William. Adjustable animal trap. 4,161,080, Cl. 43-82.000.

Gadani, Carlo. Machine for continuous production of molded articles. 4,161,383, Cl. 425-302.100.

Gaddy, Arthur K. Rocker wheel jack for an oil-well pump. 4,161,137, Cl. 92-13.000.

Gagliani, John: *See—*
Long, John V.; and Gagliani, John, 4,161,477, Cl. 260-326.00C.

Gallant, Donald A., to Longwood Machine Works, Inc. Apparatus for producing a time-proportioned control signal electronically. 4,161,660, Cl. 307-118.000.

Gallon & Company: *See—*
Ohno, Akira, 4,161,549, Cl. 426-460.000.

Galluccio, Richard A.: *See—*
Stambaugh, Robert L.; and Galluccio, Richard A., 4,161,452, Cl. 252-34.000.

Gard, Inc.: *See—*
Buday, John M.; Holmes, Lawrence B.; Milenkovic, Veljko; and Stevens, Bernard, 4,161,092, Cl. 53-244.000.
Buday, John M., 4,161,095, Cl. 53-527.000.

Gardner, Johnny B.: *See—*
Ward, John K.; and Gardner, Johnny B., 4,161,554, Cl. 427-239.000.

Garland, Robert B.: *See—*
Pappo, Raphael; and Garland, Robert B., 4,161,480, Cl. 260-365.000.

Garlinghouse, Roland E. Fail safe fluid power device. 4,161,135, Cl. 91-417.00R.

Garner, Joseph L.: *See—*
Gunsher, Jeffrey A.; Garner, Joseph L.; and Miller, Conrad O. M., 4,161,573, Cl. 526-64.000.

Garrett, Richard H.: *See—*
Ross, Albert; Garrett, Richard H.; Gordon, Hayden S.; and Flavell, Evan R., 4,161,337, Cl. 297-230.000.

Gasparek, Emery P., to General Electric Company. Matrix multiplier. 4,161,785, Cl. 364-827.000.

Gauthier, Ray J.; and Caverzan, Fred G. Artificial Christmas tree. 4,161,768, Cl. 362-123.000.

Gebruder Weiss KG: *See—*
Kneer, Franz X., 4,161,426, Cl. 435-313.000.

General Electric Company: *See—*
Anderson, Roy E., 4,161,730, Cl. 343-6.50R.
Anderson, Roy E., 4,161,734, Cl. 343-100.0ST.
Bogacki, Anthony P., 4,161,720, Cl. 340-150.000.
Bopp, Richard C., 4,161,498, Cl. 525-439.000.
Cap, Daniel M.; and Lake, William H., 4,161,672, Cl. 313-220.000.
Castleberry, Donald E.; and Waldron, Wesley K., 4,161,766, Cl. 361-280.000.
Cotic, Dennis J.; Hoffman, David M.; Shelley, Peter S.; and Zech, Laurel J., 4,161,655, Cl. 250-385.000.
Crivello, James V., 4,161,405, Cl. 96-35.100.
Crivello, James V., 4,161,478, Cl. 260-327.00B.
Drummond, Thane M., 4,161,101, Cl. 60-39.030.
Ettinger, Robert H., 4,161,638, Cl. 200-153.0SC.
Gasparek, Emery P., 4,161,785, Cl. 364-827.000.
Henry, Michael F., 4,161,412, Cl. 148-3.000.
Hoover, James W.; Long, James; and Matulevich, Edward S., 4,161,717, Cl. 340-62.000.
Hrycik, Kenneth S.; Leonhardt, John H.; and Prentice, William J., Jr., 4,161,617, Cl. 13-6.000.
LeGrand, Donald G.; and Yee, Albert F., 4,161,469, Cl. 260-40.00R.
Rathje, William C., 4,161,681, Cl. 318-783.000.
Stetson, Earl W., 4,161,763, Cl. 361-128.000.

General Electric Company Limited, The: *See—*
Insam, Edward F., 4,161,728, Cl. 340-750.000.

General Instrument Corporation: *See—*
Friberg, Vincent P.; and Kruczek, Chester R., 4,161,708, Cl. 334-15.000.

General Mills, Inc.: *See—*
Wagenknecht, Austin C., deceased; Daravingas, George V.; and Koski, William E., 4,161,517, Cl. 424-48.000.

General Motors Corporation: *See—*
Buck, Charles E.; Johnson, James M.; and Joseph, Paul A., 4,161,665, Cl. 310-26.000.

Genese, Joseph N., to Abbott Laboratories. Additive transfer device. 4,161,178, Cl. 128-272.300.

Genossenschaft Vebo Solothurnische Eingliederungs-Statte fur Behinderte: *See—*
Hauri, Hermann, 4,161,257, Cl. 215-260.000.

Georg Fischer Aktiengesellschaft: *See—*
Toedtli, Sergej, 4,161,086, Cl. 51-418.000.

GESTRA-KSB Vertriebsgesellschaft mbH & Co.: *See—*
Klann, Holm; and Lingnau, Josef, 4,161,278, Cl. 236-56.000.

Getson, Edward F., Jr.; Kelley, John H.; Rathbun, Donald J.; and McLaughlin, Albert T., to Honeywell Information Systems, Inc. Synchronization control system for firmware access of high data rate transfer bus. 4,161,778, Cl. 364-200.000.

GF Business Equipment, Inc.: *See—*
Williams, Philip J., 4,161,305, Cl. 248-608.000.

Gibs, Gabriel J.: *See—*
Elster, Charles H.; and Gibs, Gabriel J., 4,161,604, Cl. 548-352.000.

Giffin, James W.; De Santis, Michael A.; and Burchard, John S. Apparatus for in-situ processing of photoplates. 4,161,356, Cl. 354-323.000.

Gifford-Hill & Company, Inc.: *See—*
Hansen, James E., 4,161,331, Cl. 285-5.000.

Gigante, John. Method for making readily reshapable dentures. 4,161,065, Cl. 32-2.000.

Gilliams, Yvan K.; and De Volder, Noel J., to AGFA-GEVAERT N.V. Electrophoretic developers. 4,161,453, Cl. 252-62.10L.

Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergios, to Food Technology Products. Feeding herbivorous animals. 4,161,543, Cl. 426-2.000.

Glaise, Rene J.: *See—*
Dubil, James F.; Falcoz, Alain M.; Glaise, Rene J.; Jacquart, Christian A.; Leighton, Howard N.; Riso, Vladimir; and Wilfinger, Raymond J., 4,161,706, Cl. 333-165.000.

Glesmann, Herbert C.: *See—*
Fasse, Mark E.; and Glesmann, Herbert C., 4,161,143, Cl. 104-244.100.

Glover, Tony L. Potato and rock sorter. 4,161,443, Cl. 209-157.000.

Goebel, Franz; and Marincic, Nikola, to GTE Laboratories Incorporated. Method of making a cathode for an electrochemical cell. 4,161,063, Cl. 29-623.500.

Goessler, Gerhard, to E. G. O. Elektro-Geraete Blanc und Fischer. Electrical radiation heater for a glass ceramic plate. 4,161,648, Cl. 219-464.000.

Goldstein, Guy; Roussin-Moynier, Yves; and Albrecht, Gerd, to Beghin-Say. Extrusion apparatus for producing composite structures. 4,161,385, Cl. 425-462.000.

Golembeck, Gerald A., to United States Bedding Company, The. Coil spring assembly. 4,161,046, Cl. 5-248.000.

Goodman, David J. Direction finding antenna and system. 4,161,736, Cl. 343-739.000.

Goodren Products Corp.: *See—*
DePinna, George L., 4,161,074, Cl. 40-124.100.

Gordon, Hayden S.: *See—*
Ross, Albert; Garrett, Richard H.; Gordon, Hayden S.; and Flavell, Evan R., 4,161,337, Cl. 297-230.000.

Gorman, William G., to Sterling Drug Inc. Zinc salt prevention or removal of discoloration in pyrithione, pyrithione salt and dipyrithione compositions. 4,161,526, Cl. 424-245.000.

Gottschlich, Herbert; Koch, Christian; and Kunstle, Konrad, to Kraftwerk Union Aktiengesellschaft. Device for recovering oil products from oil sands. 4,161,428, Cl. 196-14.520.

Gould, Gordon. Method of energizing a material. 4,161,436, Cl. 204-157.10R.

Gould, Inc.: *See—*
Jacobs, Philip C., Jr., 4,161,713, Cl. 337-161.000.
Jacobs, Philip C., Jr., 4,161,714, Cl. 337-253.000.

Gould, Robert A.: *See—*
Black, William L.; Gould, Robert A.; and Wood, Stanley E., 4,161,133, Cl. 89-7.000.

Gouzy, Andre: *See—*
Freychet, Aime; and Gouzy, Andre, 4,161,193, Cl. 138-103.000.

Grafosol, S.p.A.: *See—*
Boschet, Vittorino, 4,161,358, Cl. 355-3.0DR.

Granatek, Alphonse P.: *See—*
Kaplan, Murray A.; and Granatek, Alphonse P., 4,161,595, Cl. 544-284.000.

Grapes, Eugene F.: *See—*
Patterson, William W., III; and Grapes, Eugene F., 4,161,145, Cl. 105-376.000.

Green, George E.; and Losert, Ewald, to Ciba-Geigy Corporation. Polymerizable esters. 4,161,588, Cl. 542-432.000.

Green, William M.; and Hoover, Maurice W. Honey coated roasted nut product and method for making same. 4,161,545, Cl. 426-93.000.

Greene, Neil E.; Srinivasan, Seshadri; and Stenger, Leonard A., to Owens-Corning Fiberglas Corporation. Method and apparatus for processing heat-softened fiber-forming material. 4,161,396, Cl. 65-1.000.

Gregg, Robert M.; and Miller, Philip C., to Zenith Radio Corporation. Arc suppression and static elimination system for a television CRT. 4,161,673, Cl. 313-481.000.

Gregson, Donald L.: *See*—
Mason, John R.; and Gregson, Donald L., 4,161,061, Cl. 29-566.400.

Grier, Nathaniel: *See*—
Wagner, Arthur F.; Grier, Nathaniel; and Shen, Tsung-Ying, 4,161,581, Cl. 525-411.000.

Grisnich, Marius. Fall brake. 4,161,243, Cl. 193-27.000.

Groves, Stanley E.; Schriber, Gene A.; Spinks, Brian M.; Baker, Richard M.; Daly, Thomas C.; and Means, Rodney J., to Motorola, Inc. Programmable timer module coupled to microprocessor system. 4,161,787, Cl. 364-900.000.

Gsell, Laurenz: *See*—
Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Meyer, Willy, 4,161,536, Cl. 424-304.000.
Meyer, Willy; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,161,535, Cl. 424-304.000.

GTE Laboratories Incorporated: *See*—
Goebel, Franz; and Marincic, Nikola, 4,161,063, Cl. 29-623.500.

GTE Sylvania Incorporated: *See*—
Bouchard, Andre C.; and Fraley, Lawrence R., 4,161,388, Cl. 431-359.000.

Gugliotta, Paul F.; and Hoffmann, David. Pipe-and-ball truss array. 4,161,088, Cl. 52-223.00R.

Guisnet, Michel: *See*—
Barrault, Joel; Guisnet, Michel; Lucien, Jacques; and Maurel, Raymond, 4,161,493, Cl. 260-609.00R.

Gulf & Western Manufacturing Company: *See*—
Nelsen, Roger J., 4,161,342, Cl. 308-6.00R.
Pilz, Gilbert B.; and Young, George H., 4,161,329, Cl. 280-474.000.

Gulton Industries, Inc.: *See*—
Bates, James W., 4,161,771, Cl. 363-43.000.

Gundrum, Richard H.: *See*—
Raugulis, Indulis E.; Dewey, Craig D.; and Gundrum, Richard H., 4,161,144, Cl. 105-163.00R.

Gunsher, Jeffrey A.; Garner, Joseph L.; and Miller, Conrad O. M., to Dow Chemical Company, The. Process for making polystyrene. 4,161,573, Cl. 526-64.000.

Gurnee, Edward F.: *See*—
Wessling, Ritchie A.; and Gurnee, Edward F., 4,161,502, Cl. 264-119.000.

Guttman, Milton. Protective means against unauthorized entry for a doorway. 4,161,333, Cl. 292-288.000.

Guyot, Patrick: *See*—
Sigwalt, Pierre; Guyot, Patrick; and Fontanille, Michel, 4,161,494, Cl. 260-665.00R.

H&T Enterprises, Inc.: *See*—
Cope, Louis T., 4,161,108, Cl. 62-306.000.

Haas, Arnold: *See*—
Reinecke, Erich; Ulrich, Helmut; Haas, Arnold; and Kolmitz, Willi, 4,161,341, Cl. 303-52.000.

Habermeier, Jurgen, to Ciba-Geigy Corporation. Dicarboxylic acids and dicarboxylic acid esters containing a benzimidazolone radical. 4,161,603, Cl. 548-305.000.

Habermeier, Jurgen: *See*—
Batzer, Hans; Habermeier, Jurgen; and Porret, Daniel, 4,161,594, Cl. 544-302.000.

Habrich, Reiner, to Siemens Aktiengesellschaft. Multiple dosing device. 4,161,262, Cl. 222-1.000.

Haendle, Joerg; Horbaschek, Heinz; and Sklebitz, Hartmut, to Siemens Aktiengesellschaft. Television pick-up system. 4,161,755, Cl. 358-219.000.

Hagiwara, Yutaca, to Nissan Motor Company, Limited. Tandem master cylinder. 4,161,105, Cl. 60-561.000.

Haley, Frank P., to FMC Corporation. Vapor recovery frame. 4,161,199, Cl. 141-387.000.

Halff, Albert H.: *See*—
Reid, Allen F.; and Halff, Albert H., 4,161,210, Cl. 165-1.000.

Halford, Wayne R., to Mattel, Inc. Curved track section for toy vehicle. 4,161,279, Cl. 238-10.00F.

Halle, Reidar; and Bock, Lawrence A., to Argus Chemical Corporation. Cyclic silyl peroxides. 4,161,485, Cl. 260-448.20R.

Halliburton Company: *See*—
Hostrup, Kai R., 4,161,224, Cl. 175-297.000.

Hamaekers, Arno: *See*—
Brenner, Heinz; and Hamaekers, Arno, 4,161,304, Cl. 248-562.000.

Hamburger, Robert N., to University of California, The Regents of the. Method for blocking allergic responses. 4,161,522, Cl. 424-177.000.

Hamer, Rene H.: *See*—
Alisic, Slobodan; Hamer, Rene H.; and Fleskens, Ludovicus A. H., 4,161,676, Cl. 315-395.000.

Hampl, Edward F., Jr., to Minnesota Mining and Manufacturing Company. Hydrostatically extruded thermoelectric legs. 4,161,111, Cl. 72-60.000.

Hanai, Yoshimitsu; Hirata, Makio; and Kogane, Mikio, to Fuji Photo Film Co., Ltd. Picture printing apparatus. 4,161,364, Cl. 355-72.000.

Hansen, James E., to Gifford-Hill & Company, Inc. Spherical irrigation pipe coupling with replaceable seal. 4,161,331, Cl. 285-5.000.

Hao, Paul L. C.; Tang, Horng S.; and Hsu, Wei W., to Industrial Technology Research Institute. PVC red-mud compositions. 4,161,465, Cl. 260-2.300.

Haraoka, Hiroshi: *See*—
Shiraki, Yoshiro; Haraoka, Hiroshi; and Arai, Hiromichi, 4,161,511, Cl. 423-341.000.

Harley, David N.: *See*—
Clinch, Colin W. F.; Harley, David N.; and Palmer, John P., 4,161,307, Cl. 251-206.000.

Harmon, Edward J.: *See*—
Bacsanyi, Thomas J.; and Harmon, Edward J., 4,161,666, Cl. 310-27.000.

Harms, David C.: *See*—
Bennett, James P.; and Harms, David C., 4,161,630, Cl. 179-18.0EB.

Harnischfeger Corporation: *See*—
Raugulis, Indulis E.; Dewey, Craig D.; and Gundrum, Richard H., 4,161,144, Cl. 105-163.00R.

Harris Corporation: *See*—
McRae, Daniel D., 4,161,628, Cl. 179-15.0BL.

Harris, Frederick E., II; and Pavitt, William H., Jr., to Harris, Frederick Earl, II. Color adaptable bandage. 4,161,176, Cl. 128-155.000.

Harris, Frederick Earl, II: *See*—
Harris, Frederick E., II; and Pavitt, William H., Jr., 4,161,176, Cl. 128-155.000.

Harris, Jesse R.: *See*—
Myers, John W.; and Harris, Jesse R., 4,161,463, Cl. 252-455.00R.

Harris, Lawrence A., to Electric Power Research Institute, Inc. Method and apparatus for measuring the interior dimensions of a hollow body. 4,161,715, Cl. 340-16.00R.

Harsco Corporation: *See*—
McGregor, Jimmie R., 4,161,384, Cl. 425-388.000.

Hart, James E., to Westinghouse Air Brake Company. Poppet valve type brake control valve device. 4,161,340, Cl. 303-33.000.

Hartnig, Richard E., to Paper Converting Machine Company. Apparatus for making a connected series of stuffed sealed envelope assemblies. 4,161,091, Cl. 53-206.000.

Hase, Takashi: *See*—
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,161,457, Cl. 252-301.40R.

Hattori, Kenichi: *See*—
Fuzisawa, Noriyoshi; and Hattori, Kenichi, 4,161,083, Cl. 47-1.100.

Haug, Theobald; Keifer, Jurg; Ruf, Peter; and Schmitter, Andre, to Ciba-Geigy Corporation. Thermosetting mixtures of polyimide beta-amino crotonic acid derivative and polyamine which are stable on storage. 4,161,580, Cl. 528-322.000.

Haugen, Donald J. Animal litter container. 4,161,157, Cl. 119-1.000.

Hauni-Werke Korber & Co. KG.: *See*—
Blidung, Otto; Tolasch, Gerhard; and Bardenhagen, Dietrich, 4,161,094, Cl. 53-493.000.

Hauri, Hermann, to Genossenschaft Vebo Solothurnische Eingliederungs-Statte fur Behinderte. Closure for vacuum bottles and the like. 4,161,257, Cl. 215-260.000.

Hauser, Stephen G.; and Keith, Keith S., to United States Borax & Chemical Corporation. Device for dispensing powdered material. 4,161,265, Cl. 222-181.000.

Heide, Wilfried; Muller, Friedrich; Otto, Klaus; and Salanki, Tibor, to Siemens Aktiengesellschaft. Cooling capsule for a thyristor. 4,161,213, Cl. 165-168.000.

Heil, Charles W. Ski storing, protecting, and carrying apparatus. 4,161,268, Cl. 224-45.00S.

Heitmann, Juergen, to Siemens Aktiengesellschaft. Code generator for text transmission devices. 4,161,623, Cl. 178-79.000.

Hendrixon, John L.; and Rositch, Robert R., to Sealed Power Corporation. Piston ring and method of manufacture. 4,161,321, Cl. 277-216.000.

Hennecke, Hermann; Mertens, Paul; and Krecher, Josef, to Deutsche Babcock Aktiengesellschaft. Blower beater mill. 4,161,295, Cl. 241-66.000.

Hennecke, Hermann: *See*—
Lautenschlager, Friedrich W.; and Hennecke, Hermann, 4,161,294, Cl. 241-56.000.

Henry, Michael F., to General Electric Company. Method of heat treating γ/γ'-α eutectic nickel-base superalloy body. 4,161,412, Cl. 148-3.000.

Herman, John L.; and Stavisky, John, to Xerox Corporation. Photoreceptor heating apparatus. 4,161,357, Cl. 355-3.0DR.

Hermann, Hans D.; and Ebigt, Joachim, to Hoechst Aktiengesellschaft. Plasticizer containing polyvinylbutyral sheets having a reduced adhesion to glass. 4,161,565, Cl. 428-437.000.

Herron, Dale J., to Bepex Corporation. Process for solid phase polymerization of polyester. 4,161,578, Cl. 528-272.000.

Herron, William L., to Singer Company, The. Pretension threading device. 4,161,152, Cl. 112-254.000.

Heusler, Karl; and Woodward, Robert B., to Ciba-Geigy Corporation. α-Halo-2-oxo-1-azetidinemethane-carboxylic acid compounds. 4,161,476, Cl. 260-306.70C.

Hewlett-Packard Company: *See*—
Casey, Ross H., 4,161,270, Cl. 226-118.000.

Heyl, Bodo, to Robert Bosch GmbH. Mixing of SECAM color-T.V. signals. 4,161,748, Cl. 358-22.000.

Hicks, George E.; Litherland, John W.; Martin, Arlan G.; and Williams, Lawrence, to Caterpillar Tractor Co. Fuel additive injection system for diesel engines. 4,161,160, Cl. 123-1.00A.

Higgins, William A., to Lubrizol Corporation, The. Aqueous disperse compositions containing clay and oleaginous film-forming materials. 4,161,566, Cl. 428-454.000.

Hightower, Stanley J., to Martin Marietta Corporation. Pneumatically controlled wide heat load space radiator. 4,161,212, Cl. 165-96.000.

Hildebrandt, William J.; and West, Robert F., to Stanley Works, The. Digital tape rule. 4,161,781, Cl. 364-562.000.

Hill, Isaac. Instant mouse trap. 4,161,079, Cl. 43-58.000.

Hill, J. Ernest. Watering device. 4,161,290, Cl. 239-396.000.

Hill, William G.: *See—*
Bromwich, Robert A. C.; Hill, William G.; and Lawrence, Charles M., 4,161,640, Cl. 219-60.00A.

Hiramoto, Seigo: *See—*
Shimada, Wataru; and Hiramoto, Seigo, 4,161,645, Cl. 219-137.00R.

Hirata, Makio: *See—*
Hanai, Yoshimitsu; Hirata, Makio; and Kogane, Mikio, 4,161,364, Cl. 355-72.000.

Hirsch, Wolfgang, to Behringwerke Aktiengesellschaft. Stabilized diagnostic test strip for the detection of urobilinogen. 4,161,507, Cl. 422-56.000.

Hirschmann, Ralph F.: *See—*
Veber, Daniel F.; Holly, Frederick W.; Strachan, Robert G.; Paleveda, William J.; Nutt, Ruth F.; and Hirschmann, Ralph F., 4,161,521, Cl. 424-177.000.

Hisazumi, Nobuyuki: *See—*
Yoshikawa, Shinsuke; Hisazumi, Nobuyuki; and Yamamoto, Masataka, 4,161,562, Cl. 428-215.000.

Hitachi, Ltd.: *See—*
Fujikata, Kenji; Yokozawa, Norio; and Shibayama, Akinori, 4,161,700, Cl. 328-147.000.
Kawagoe, Hiroto; and Nomiya, Kosei, 4,161,664, Cl. 307-304.000.
Matsunaga, Takehiko; Umeda, Saburo; and Kamei, Tsuneaki, 4,161,431, Cl. 204-15.000.
Sano, Yoshihiro; Chiba, Tomio; Kudou, Hiroyuki; and Miki, Yoshiteru, 4,161,651, Cl. 250-199.000.
Takeda, Yutaka; Nakamura, Satoshi; Chinone, Naoki; Nakashima, Hisao; and Kurata, Kazuhiro, 4,161,701, Cl. 331-94.50H.

Hoechst Aktiengesellschaft: *See—*
Bormann, Dieter; Merkel Wulf; and Muschaweck, Roman, 4,161,531, Cl. 424-274.000.
Hermann, Hans D.; and Ebigt, Joachim, 4,161,565, Cl. 428-437.000.
Konz, Elmar; and Pistorius, Rudolf, 4,161,614, Cl. 568-670.000.
Muller, Werner H., 4,161,615, Cl. 568-740.000.
Strametz, Helmut; and Rust, Kurt, 4,161,574, Cl. 526-159.000.
Sturm, Karl; and Muschaweck, Roman, 4,161,533, Cl. 424-285.000.

Hoeger, John G.: *See—*
Thomas, Carlton E.; Sigler, Robert D.; and Hoeger, John G., 4,161,351, Cl. 350-294.000.

Hoff, Gerald F.: *See—*
Kessler, Bernard V.; Hoff, Gerald F.; and Burke, James R., 4,161,702, Cl. 331-94.50H.

Hoffman, David M.: *See—*
Cotic, Dennis J.; Hoffman, David M.; Shelley, Peter S.; and Zech, Laurel J., 4,161,655, Cl. 250-385.000.

Hoffman-La Roche Inc.: *See—*
Weigele, Manfred; and DeBernardo, Silvano, 4,161,582, Cl. 536-1.000.

Hoffmann, David: *See—*
Gugliotta, Paul F.; and Hoffmann, David, 4,161,088, Cl. 52-223.00R.

Hoffmann-La Roche Inc.: *See—*
Osborne, Melville W.; and Cohen, Michael R., 4,161,520, Cl. 424-115.000.

Hollingsworth & Vose Company: *See—*
Lawson, Grover C.; and Wilson, James C., 4,161,422, Cl. 162-135.000.

Holloway, Huland L.; and Norum, Edward M., Jr., to Lockwood Corporation. Center pivot irrigation system having apparatus for irrigating corners. 4,161,292, Cl. 239-11.000.

Holly, Frederick W.: *See—*
Veber, Daniel F.; Holly, Frederick W.; Strachan, Robert G.; Paleveda, William J.; Nutt, Ruth F.; and Hirschmann, Ralph F., 4,161,521, Cl. 424-177.000.

Holman, Daniel V., to Adjustable Clamp Company. Kerf clamp. 4,161,311, Cl. 269-49.000.

Holmes, Lawrence B.: *See—*
Buday, John M.; Holmes, Lawrence B.; Milenkovic, Veljko; and Stevens, Bernard, 4,161,092, Cl. 53-244.000.

Holmes Protection, Inc.: *See—*
Conklin, Robert M.; and Human, Arthur T., 4,161,721, Cl. 340-168.00B.

Hone, George D.: *See—*
Saunders, Robert L.; and Hone, George D., 4,161,049, Cl. 14-71.500.

Honecker, Gunter, to Linde Aktiengesellschaft. Steering assembly for a vehicle, especially for an industrial floor vehicle, such as a forklift truck. 4,161,327, Cl. 280-95.00R.

Honeywell Information Systems, Inc.: *See—*
Cushing, David E.; and Tague, Steven A., 4,161,784, Cl. 364-748.000.
Getson, Edward F., Jr.; Kelley, John H.; Rathbun, Donald J.; and McLaughlin, Albert T., 4,161,778, Cl. 364-200.000.

Hoover, James W.; Long, James; and Matulevich, Edward S., to General Electric Company. Locked axle detector for a multi-axle traction vehicle. 4,161,717, Cl. 340-62.000.

Hoover, Maurice W.: *See—*
Green, William M.; and Hoover, Maurice W., 4,161,545, Cl. 426-93.000.

Hopkins, Charles E., Sr.: *See—*
Moores, Robert G., Jr.; and Hopkins, Charles E., Sr., 4,161,242, Cl. 192-34.000.

Hopkins, Gregory T.; Dahod, Ashraf M.; Demarines, Victor A.; Meisner, Norman B.; and Willard, David G., to Mitre Corporation, The. Digital bus communications system. 4,161,786, Cl. 364-900.000.

Horbaschek, Heinz: *See—*
Haendle, Joerg; Horbaschek, Heinz; and Sklebitz, Hartmut, 4,161,755, Cl. 358-219.000.

Horgan, John J.; and Morrison, Francis H., to United Technologies Corporation. Centrifugal combustor with fluidized bed and construction thereof. 4,161,103, Cl. 60-39.350.

Hostrup, Kai R., to Halliburton Company. Fluid dump mechanism. 4,161,224, Cl. 175-297.000.

Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel: *See—*
Kollenberger, Walter M., deceased, 4,161,154, Cl. 114-122.000.

Howarth, William F., Jr. Lifeline carrier. 4,161,266, Cl. 224-215.000.

Howells, John N. M., to Recycling & Conservation, Inc. Set of sorting-stacking bins. 4,161,252, Cl. 211-126.000.

HPM Corporation: *See—*
Bishop, Thomas G., 4,161,380, Cl. 425-145.000.

Hrycik, Kenneth S.; Leonhardt, John H.; and Prentice, William J., Jr., to General Electric Company. Method and apparatus for electrically melting glass. 4,161,617, Cl. 13-6.000.

Hsu, Wei W.: *See—*
Hao, Paul L. C.; Tang, Horng S.; and Hsu, Wei W., 4,161,465, Cl. 260-2.300.

Hugon, Pierre: *See—*
Beregi, Laszlo; Hugon, Pierre; Duhault, Jacques; and Boulanger, Michelle, 4,161,529, Cl. 424-274.000.

Human, Arthur T.: *See—*
Conklin, Robert M.; and Human, Arthur T., 4,161,721, Cl. 340-168.00B.

Humbert, Heiko; and Wegner, Hans-Georg, to Deutsche Texaco Aktiengesellschaft. Novel method of treating a charge hydrocarbon stream containing isobutene and also butadiene. 4,161,496, Cl. 585-836.000.

Hunter, James R.; Lazzarotti, Sebastian J.; and Bradshaw, Robert S., to Burroughs Corporation. Mail buffer feeder system. 4,161,244, Cl. 198-347.000.

Husson, Alan L., to Westinghouse Electric Corp. Elevator system. 4,161,236, Cl. 187-29.00R.

Husson, Alan L.: *See—*
Caputo, William R.; and Husson, Alan L., 4,161,235, Cl. 187-29.00R.

Hutson, Thomas, Jr.: *See—*
Makovec, Donald J.; and Hutson, Thomas, Jr., 4,161,497, Cl. 585-714.000.

Hutta, Joseph J.: *See—*
Quinlan, Kenneth P.; and Hutta, Joseph J., 4,161,434, Cl. 204-146.000.

Hydril Company: *See—*
Blose, Thomas L., 4,161,332, Cl. 285-334.000.

Hyman, Sy. Article for the dispensing of volatiles. 4,161,283, Cl. 239-55.000.

Ibec Industries, Inc.: *See—*
Jacob, Keith, 4,161,685, Cl. 323-19.000.

Ikawa, Shukuko: *See—*
Ando, Tadahiko; Shibata, Takehiko; Ikawa, Shukuko; and Kim, Cholung, 4,161,424, Cl. 435-199.000.

Imperial Chemical Industries Limited: *See—*
Caunt, Anthony D.; and Williams, Ian G., 4,161,461, Cl. 252-429.00B.

Incoe Corporation: *See—*
Osuna-Diaz, Jesus M., 4,161,386, Cl. 425-549.000.

Indesit Industria Elettrodomestici Italiana S.p.A.: *See—*
Zappala, Giuseppe, 4,161,675, Cl. 315-371.000.

Indian Space Research Organisation, The: *See—*
Nema, Suresh K., 4,161,482, Cl. 260-404.000.

Industrial Technology Research Institute: *See—*
Hao, Paul L. C.; Tang, Horng S.; and Hsu, Wei W., 4,161,465, Cl. 260-2.300.

Industrie Specializzate Articoli Plastici S.p.A.: *See—*
Padovani, Pietro, 4,161,382, Cl. 425-291.000.

Ingendahl, Kurt. Clock having a linear scale. 4,161,098, Cl. 58-2.000.

Innova, Inc.: *See—*
Moeglich, Karl, 4,161,435, Cl. 204-152.000.

Insam, Edward F., to General Electric Company Limited, The. Electronic display apparatus. 4,161,728, Cl. 340-750.000.

Intermedicat GmbH: *See—*
Fuchs, Heinz, 4,161,177, Cl. 128-214.400.

International Business Machines Corporation: *See—*
Bailey, Jack H.; and Ottaway, Gerald H., 4,161,753, Cl. 358-128.000.
Barclay, Donald J.; and Morgan, William M., 4,161,432, Cl. 204-51.000.
Basilico, Albert R., 4,161,752, Cl. 358-128.000.
Dubil, James F.; Falcoz, Alain M.; Glaise, Rene J.; Jacquart, Christian A.; Leighton, Howard N.; Riso, Vladimir; and Wilfinger, Raymond J., 4,161,706, Cl. 333-165.000.

International Harvester Company: *See—*
Duffy, Thomas E.; and Rohy, David A., 4,161,211, Cl. 165-1.000.
Moreno, Emil F., 4,161,369, Cl. 414-722.000.
Ralston, Horace E.; Robinson, Edward L., Jr.; and Ralston, William K., deceased, 4,161,253, Cl. 414-25.000.

International Nickel Company, Inc., The: *See—*
Sandrock, Gary D., 4,161,401, Cl. 75-170.000.
Sandrock, Gary D., 4,161,402, Cl. 75-170.000.

International Research and Development Corp.: *See—*
Leong, Basil K. J., 4,161,159, Cl. 119-18.000.

International Telephone and Telegraph Corporation: *See—*
Dishal, Milton; and Van Etten, James P., 4,161,696, Cl. 325-163.000.
Nemit, Jeffrey T.; and Wolfson, Ronald I., 4,161,705, Cl. 333-156.000.
Treiber, Robert, 4,161,633, Cl. 179-170.200.

Inui, Takayasu; and Nishimura, Satoru, to Kabushiki Kaisha Komatsu Seisakusho. Transmission gear for a vehicle of the type having a swivelling upper structure with respect to an undercarriage. 4,161,227, Cl. 180-70.00R.

Ishiguro, Yasuo; Wakazono, Kenji; and Saito, Toshihisa, to Copal Company Limited. Exposure controlling circuit for electric shutters. 4,161,764, Cl. 361-187.000.

Ishizuka, Kenzo; Fujisawa, Hiroshi; and Noda, Etsunosuke, to Takeda Chemical Industries, Ltd. Antibiotic compositions. 4,161,527, Cl. 424-246.000.

Itoh, Tsutomu; Sakurai, Munekazu; Yamamoto, Masahiro; and Okamoto, Yasunari, to Onoda Cement Co., Ltd. Powder material processing apparatus. 4,161,765, Cl. 361-226.000.

ITW Fastex Italia: *See—*
Aimar, Michele, 4,161,669, Cl. 310-194.000.

ITW Limited: *See—*
Clinch, Colin W. F.; Harley, David N.; and Palmer, John P., 4,161,307, Cl. 251-206.000.

Iwatsu Electric Co., Ltd.: *See—*
Kokaji, Norio, 4,161,738, Cl. 346-74.100.

J. M. Huber Corporation: *See—*
Wason, Satish K., 4,161,455, Cl. 252-174.250.

Jacob, Keith, to Scovill Manufacturing Company. Solid state proximity switch. 4,161,659, Cl. 307-39.000.

Jacob, Keith, to Ibec Industries, Inc. Solid state proximity switch. 4,161,685, Cl. 323-19.000.

Jacobs, Philip C., Jr., to Gould, Inc. Fusible element for electric fuses having a relatively high voltage rating and a relatively high cycling performance. 4,161,713, Cl. 337-161.000.

Jacobs, Philip C., Jr., to Gould, Inc. Electric fuse. 4,161,714, Cl. 337-253.000.

Jacquart, Christian A.: *See—*
Dubil, James F.; Falcoz, Alain M.; Glaise, Rene J.; Jacquart, Christian A.; Leighton, Howard N.; Riso, Vladimir; and Wilfinger, Raymond J., 4,161,706, Cl. 333-165.000.

Jahrbacher, Gert: *See—*
Ritter, Klaus; Ritter, Gerhard; Ritter, Josef; Pohacker, Josef; and Jahrbacher, Gert, 4,161,110, Cl. 72-7.000.

Jalin, Rene J. J.: *See—*
Moreau, Bernard G. A.; and Jalin, Rene J. J., 4,161,652, Cl. 250-203.00R.

Janchen, Dieter, to Camag Chemie-Erzeugnisse und Adsorptionstechnik AG. Apparatus for applying liquid samples to surfaces. 4,161,508, Cl. 422-100.000.

Jasas, Gytis B.; Trauth, Richard L.; and Smith, Raymond, to Teledyne Industries, Inc. Turbine engine starting system. 4,161,102, Cl. 60-39.14M.

Jeffers, Robert P., to Youngstown Sheet and Tube Company. Tube joint and method of making same. 4,161,273, Cl. 228-154.000.

Jefferson Industries Company, The: *See—*
Dill, Terry A., 4,161,677, Cl. 318-482.000.

Jenkins, Alfred D.: *See—*
Parikh, Bipin D.; Patnaik, Haresh C.; Patel, Bhagubhai K.; Dharia, Prabodh M.; Kurtz, John J.; Jenkins, Alfred D.; and Mahajan, Prakash Y., 4,161,719, Cl. 340-147.0SY.

Jennings, Donald E.: *See—*
United States of America, National Aeronautics and Space Administration; and Jennings, Donald E., 4,161,747, Cl. 357-82.000.

Jerrold Electronics Corporation: *See—*
Winston, Eric, 4,161,790, Cl. 365-94.000.

Jimenez, Antonio: *See—*
Fresard, Marcel; and Jimenez, Antonio, 4,161,151, Cl. 112-217.100.

Johnson, Bryan E.: *See—*
Malmgren, Arthur L.; and Johnson, Bryan E., 4,161,264, Cl. 222-135.000.

Johnson, James M.: *See—*
Buck, Charles E.; Johnson, James M.; and Joseph, Paul A., 4,161,665, Cl. 310-26.000.

Johnson, Joseph E.; Ostop, John A.; and Moore, David L., to Westinghouse Electric Corp. Glass sealed diode. 4,161,746, Cl. 357-73.000.

Johnson, Roy A.; and Sih, John C., to Upjohn Company, The. 5-Hydroxy-PGI$_1$, 3,4-didehydropiperidylamides. 4,161,585, Cl. 542-426.000.

Johnson, Roy A.; and Sih, John C., to Upjohn Company, The. 5-Hydroxy-PGI$_1$ piperazinylamides. 4,161,586, Cl. 542-426.000.

Johnson, Roy A.; and Sih, John C., to Upjohn Company, The. 5-Hydroxy-PGI$_1$ hexamethyliminoamides. 4,161,587, Cl. 542-426.000.

Johnson Rubber Company, The: *See—*
Sudyk, John R., 4,161,379, Cl. 425-112.000.

Jones, Ronald E.: *See—*
Cusano, Carmen M.; Rubin, Isaac D.; Jones, Ronald E.; and Vartanian, Paul F., 4,161,392, Cl. 44-62.000.

Jorgensen, Richard G., to Parker-Hannifin Corporation. Jet type liquid level sensor and system. 4,161,188, Cl. 137-386.000.

Joseph, Paul A.: *See—*
Buck, Charles E.; Johnson, James M.; and Joseph, Paul A., 4,161,665, Cl. 310-26.000.

Jos. Schneider & Co. Optische Werke: *See—*
Thomas, Otto, 4,161,756, Cl. 358-225.000.

Joshi, Madan M.: *See—*
Bellet, Eugene M.; and Joshi, Madan M., 4,161,397, Cl. 71-7.000.

Justus, Edgar J., to Beloit Corporation. Method and apparatus for plybonding control. 4,161,205, Cl. 162-133.000.

Juy, Henri, heir: *See—*
Juy, Lucien C. H., deceased, 4,161,124, Cl. 74-217.00B.

Juy, Lucien C. H., deceased (by Juy, Henri, heir), to Le Simplex. Apparatus for the control by a cable of speed change devices of articulated parallelogram type for bicycles and similar vehicles. 4,161,124, Cl. 74-217.00B.

Kabanov, Viktor A.: *See—*
Bocharov, Jury N.; Kabanov, Viktor A.; Martynova, Marina A.; Popov, Valery G.; Smetanjuk, Vladimir I.; and Fedorov, Viktor V., 4,161,462, Cl. 252-429.00B.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Inui, Takayasu; and Nishimura, Satoru, 4,161,227, Cl. 180-70.00R.

Kaga, Takashi, to Tomy Kogyo Co., Inc. Amusement device with apertures and timed ball release. 4,161,314, Cl. 273-121.00R.

Kagami, Akiyasu: *See—*
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,161,457, Cl. 252-301.40R.

Kahle, Rolf D., to Quantor Corporation. Instantaneous exposure control for film. 4,161,363, Cl. 355-68.000.

Kaieda, Nobuo; Kawakami, Kenji; Okano, Yoshihiro; and Ohtsu, Hiroshi, to Yokogawa Electric Works, Ltd. Servo-system. 4,161,678, Cl. 318-641.000.

Kakigi, Takao, to Cybernet Electronic Corporation. Transmission and reception control circuit for a transceiver. 4,161,695, Cl. 325-17.000.

Kakurai, Tadao. Loading coil for antenna. 4,161,710, Cl. 336-192.000.

Kalmanovitch, Martin, to Universal Wire & Cable Co. Ltd. Container for wire spool. 4,161,248, Cl. 206-389.000.

Kalo Laboratories, Inc.: *See—*
Bellet, Eugene M.; and Joshi, Madan M., 4,161,397, Cl. 71-7.000.

Kamei, Tsuneaki: *See—*
Matsunaga, Takehiko; Umeda, Saburo; and Kamei, Tsuneaki, 4,161,431, Cl. 204-15.000.

Kamin, Gerhard R., to Robert Bosch GmbH. Video alarm systems. 4,161,750, Cl. 358-105.000.

Kamyr, Inc.: *See—*
Sherman, Michael I., 4,161,421, Cl. 162-18.000.

Kanai, Takao; and Mori, Yujiro, to Clarion Co., Ltd. Pushbutton tuner having linkage operated tuning slider. 4,161,707, Cl. 334-7.000.

Kane, Jeffrey, to Ferranti Limited. Semiconductor devices with matched resistor portions. 4,161,742, Cl. 357-48.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Yonezawa, Kazuya; Furukawa, Hisao; and Azuma, Masaaki, 4,161,572, Cl. 525-100.000.

Kao Soap Co., Ltd.: *See—*
Fuzisawa, Noriyoshi; and Hattori, Kenichi, 4,161,083, Cl. 47-1.100.
Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, 4,161,459, Cl. 252-352.000.
Sasaki, Tetsuo; and Tsuchiya, Yoshimi, 4,161,050, Cl. 15-159.00A.

Kaplan, Murray A.; and Granatek, Alphonse P., to Bristol-Myers Company. Levulinic acid salt. 4,161,595, Cl. 544-284.000.

Karasudani, Yasuo, to Tokico Ltd. Disc brake. 4,161,239, Cl. 188-106.00P.

Karjuk, Gennady G.: *See—*
Merzhanov, Alexandr G.; Borovinskaya, Inna P.; Karjuk, Gennady G.; Dubovitsky, Fedor I.; Prokudina, Valentina K.; Ratnikov, Viktor I.; Bochko, Anatoly V.; Moshkovsky, Evgeny I.; Sharivker, Semen J.; and Krizhanovsky, Sergei S., 4,161,512, Cl. 423-440.000.

Karlstedt, Gustav: *See—*
Svensson, Lars G.; Karlstedt, Gustav; Tisell, Claes; and Thorstensson, Yngve, 4,161,228, Cl. 180-282.000.

Kartesz, Frank A. Preservation of live fish bait. 4,161,158, Cl. 119-1.000.

Kasinskas, Michael M., to State of Connecticut; and United States of America, America, part interest to each. Method and apparatus for dispensing a deicer liquid. 4,161,280, Cl. 239-1.000.

Kassal, Robert J., to Du Pont de Nemours, E. I., and Company. Elastomer modified unsaturated molding compositions. 4,161,471, Cl. 260-40.00R.

Katsuda, Yoshio; Nakajima, Minoru; and Fujita, Toshio, to Dainippon Jochugiki Kabushiki Kaisha. Insecticidal isovaleric acid esters. 4,161,537, Cl. 424-304.000.

Katterfeldt, Harald; and Mangold, Helmut, to Licentia, Patent-Verwaltungs-G.m.b.H. Method for determining the fundamental frequency of a voice signal. 4,161,625, Cl. 179-1.0SC.

Katzman, Allison W.; Schoenfield, Palmer J.; and Meyer, Burton C., to Marvin Glass & Associates. Amusement set. 4,161,081, Cl. 46-11.000.

Kaul, Dieter. Process for making a pourable material for chewing gum. 4,161,544, Cl. 426-5.000.

Kawagoe, Hiroto; and Nomiya, Kosei, to Hitachi, Ltd. Input circuit. 4,161,664, Cl. 307-304.000.

Kawaguchi, Hiroshi; and Nomura, Yoshihisa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Control valve for use in automotive brake system for controlling brake fluid pressure. 4,161,339, Cl. 303-24.00F.

Kawakami, Kenji: *See—*
Kaieda, Nobuo; Kawakami, Kenji; Okano, Yoshihiro; and Ohtsu, Hiroshi, 4,161,678, Cl. 318-641.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Sato, Masato; and Nakamizo, Keiichi, 4,161,156, Cl. 115-76.000.

Kay, D. Alan R.: *See*—
Wilson, William G.; and Kay, D. Alan R., 4,161,400, Cl. 75-58.000.

Keifer, Jurg: *See*—
Haug, Theobald; Keifer, Jurg; Ruf, Peter; and Schmitter, Andre, 4,161,580, Cl. 528-322.000.

Keinzle Uhrenfabriken GmbH: *See*—
Storz, Erwin, 4,161,099, Cl. 58-4.00R.

Keith, Keith S.: *See*—
Hauser, Stephen G.; and Keith, Keith S., 4,161,265, Cl. 222-181.000.

Keller Corp., The: *See*—
Batzdorff, Alfred, 4,161,368, Cl. 414-114.000.

Kelley, John H.: *See*—
Getson, Edward F., Jr.; Kelley, John H.; Rathbun, Donald J.; and McLaughlin, Albert T., 4,161,778, Cl. 364-200.000.

Kern, Hans, to Siemens Aktiengesellschaft. Circuit arrangement for driving piezoelectric ink jet printers. 4,161,670, Cl. 310-317.000.

Kerstges, Johannes: *See*—
Beelmann, Richard; Kerstges, Johannes; and Mertens, Paul, 4,161,293, Cl. 241-56.000.

Kessler, Bernard V.; Hoff, Gerald F.; and Burke, James R., to United States of America, Navy. Distributed feedback filter and laser. 4,161,702, Cl. 331-94.50H.

Khan, Mir I. A., to Albany International Corp. Non-twill paperforming fabric. 4,161,195, Cl. 139-383.00A.

Khodosov, Nikolai A.: *See*—
Berber, Viktor A.; Mozyakov, Vladimir I.; and Khodosov, Nikolai A., 4,161,275, Cl. 233-31.000.

Kienel, Gerhard, to Leybold-Heraeus GmbH & Co. KG. Method of producing antireflective coatings on polydiethyleneglycoldiallylcarbonate, an optical product made by the method, and the use of the optical product. 4,161,547, Cl. 428-213.000.

Kienel, Gerhard, to Leybold-Heraeus GmbH & Co. KG. Method of producing antireflective coatings on acrylic glasses, optical bodies produced by this method and the use of such optical bodies. 4,161,560, Cl. 428-213.000.

Kim, Cholung: *See*—
Ando, Tadahiko; Shibata, Takehiko; Ikawa, Shukuko; and Kim, Cholung, 4,161,424, Cl. 435-199.000.

Kim, Dong-Whee, to Veesicol Chemical Corporation. Process for the production of 2-methoxy-3,6-dichlorobenzoic acid. 4,161,611, Cl. 562-474.000.

Kindlmann, Peter J.: *See*—
Yarwood, John C.; Yun, Ik Y.; Tyler, Derek E.; and Kindlmann, Peter J., 4,161,206, Cl. 164-49.000.

King, Larry: *See*—
Nicks, Robert W.; and King, Larry, 4,161,181, Cl. 131-231.000.

Kirkpatrick, Alan D., to Corrugated Development, Inc. Web clamp. 4,161,269, Cl. 226-92.000.

Kishino, Shigeo; Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; and Tsuboi, Shinichi, to Bayer Aktiengesellschaft. O-Alkyl-S-n-propyl-N-sulfonyl-phosphoric acid ester amides. 4,161,524, Cl. 424-215.000.

Kits van Heyningen, Arent H., to Raytheon Company. Communication system with selectable data storage. 4,161,629, Cl. 179-15.0BA.

Klank, Otto, to Licentia, Patent-Verwaltungs-G.m.b.H. Tuning circuit for superheterodyne receiver. 4,161,698, Cl. 325-468.000.

Klann, Holm; and Lingnau, Josef, to GESTRA-KSB Vertriebsgesellschaft mbH & Co. Thermally-controlled valve for a steam trap. 4,161,278, Cl. 236-56.000.

Klass, Donald L., to Union Oil Company of California. Process for preparing vinyl esters. 4,161,610, Cl. 560-243.000.

Klauke, Erich; Kysela, Ernst; and Dorlars, Alfons, to Bayer Aktiengesellschaft. Process for the preparation of triazines containing a mixture of chlorine and fluorine substituents, and of cyanuric fluoride. 4,161,593, Cl. 544-217.000.

Kleemann, Axel; Klenk, Herbert; and Schwarze, Werner, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of alpha-ketocarboxylic acid amides and cycloaliphatic products. 4,161,491, Cl. 260-557.00R.

Klein, Axel: *See*—
Eckhardt, Friedhelm; Raffenberg, Wolfgang; and Klein, Axel, 4,161,312, Cl. 271-3.000.

Klenk, Herbert: *See*—
Kleemann, Axel; Klenk, Herbert; and Schwarze, Werner, 4,161,491, Cl. 260-557.00R.

Kline, Gaylen O., to National Machinery Company, The. Knockout adjustment mechanism for forging machines. 4,161,113, Cl. 72-344.000.

Klinkert, Gerardus F., to B.V. Neratoom. X-ray tube. 4,161,671, Cl. 313-60.000.

Klos, Ted; and Tiedt, Herman J., to American Motors Corporation. Multimode electronic brake monitor system. 4,161,649, Cl. 235-92.0MP.

Klyce, Thomas A., to Mohawk Valve Company. Fluid by-pass/seal means. 4,161,309, Cl. 251-328.000.

Kneer, Franz X., to Gebruder Weiss KG. Apparatus for removing gaseous impurities. 4,161,426, Cl. 435-313.000.

Kneuttinger, Alfrons: *See*—
Stossberg, Udo; Frania, Josef; Meyer, Hans F.; and Kneuttinger, Alfrons, 4,161,134, Cl. 91-219.000.

Knorr-Bremse-Bowles-Fluidics GmbH: *See*—
Ranger, Anton; and Uebel, Alexander, 4,161,191, Cl. 137-625.460.

Kobe, Inc.: *See*—
Erickson, John W.; and Soriano, Peter A., 4,161,448, Cl. 210-258.000.

Koch, Christian: *See*—
Gottschlich, Herbert; Koch, Christian; and Kunstle, Konrad, 4,161,428, Cl. 196-14.520.

Koella, Werner P., to Ciba-Geigy Corporation. Pharmaceutical combination preparations as hypnotics. 4,161,530, Cl. 424-274.000.

Koeln, Harold E.; and Paige, Walter W., Jr., to Penn Corporation. Twist retractable writing implement. 4,161,374, Cl. 401-116.000.

Koenig, Thomas A.: *See*—
Benasutti, Roger; and Koenig, Thomas A., 4,161,767, Cl. 362-33.000.

Koerner, Gotz: *See*—
Borner, Dieter; Koerner, Gotz; and Rossmy, Gerd, 4,161,487, Cl. 260-448.20R.

Kogane, Mikio: *See*—
Hanai, Yoshimitsu; Hirata, Makio; and Kogane, Mikio, 4,161,364, Cl. 355-72.000.

Kohn, Mitchell I.; and Alton, Ahdor H., to Love Controls Corporation. Cam program controller systems. 4,161,679, Cl. 318-685.000.

Kohno, Osamu: *See*—
Agatsuma, Ko; Koyama, Kenichi; Todoriki, Itaru; Yamaguchi, Tetsuo; Kohno, Osamu; and Saito, Takashi, 4,161,062, Cl. 29-599.000.

Koike, Junro: *See*—
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,161,457, Cl. 252-301.40R.

Kojima, Katumi, to Daicel Ltd.; and Mitsui Shipbuilding & Engineering Co., Ltd. Process for treating waste water containing radioactive substances. 4,161,447, Cl. 210-23.00H.

Kojima, Takehiro: *See*—
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,161,457, Cl. 252-301.40R.

Kokaji, Norio, to Iwatsu Electric Co., Ltd. Method and apparatus for recording latent images for magnetography. 4,161,738, Cl. 346-74.100.

Kollenberger, Kathe L. M., administratrix: *See*—
Kollenberger, Walter M., deceased, 4,161,154, Cl. 114-122.000.

Kollenberger, Walter M., deceased (by Kollenberger, Kathe L. M., administratrix), to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel. Stabilizing device for ships. 4,161,154, Cl. 114-122.000.

Kolleth, Gary G., to Scott's Liquid Gold Incorporated. Stable aqueous aerosol system with carbon dioxide propellant. 4,161,458, Cl. 252-305.000.

Kolmitz, Willi: *See*—
Reinecke, Erich; Ulrich, Helmut; Haas, Arnold; and Kolmitz, Willi, 4,161,341, Cl. 303-52.000.

Komiyama, Nakaba: *See*—
Uchida, Norio; and Komiyama, Nakaba, 4,161,237, Cl. 188-1.00B.

Konz, Elmar; and Pistorius, Rudolf, to Hoechst Aktiengesellschaft. Process for the preparation of cyclohexane dione-(1,4)-tetramethyl diketal. 4,161,614, Cl. 568-670.000.

Kooiman, Pieter L., to Avedko B.V. Stacking device. 4,161,146, Cl. 108-136.000.

Koomen, Joannes J. M.: *See*—
Collet, Marnix G.; Salters, Roelof H. W.; and Koomen, Joannes J. M., 4,161,741, Cl. 357-41.000.

Korsakov-Bogatkov, Sergei M.; Krakovsky, Boris D.; Nikitkin, Vasily D.; Onosovsky, Evgeny V.; Pronko, Vladimir G.; Stolper, Leonid M.; and Chernyshev, Boris A. Method of producing supercold temperature in cryogenic systems. 4,161,107, Cl. 62-117.000.

Koski, William E.: *See*—
Wagenknecht, Austin C., deceased; Daravingas, George V.; and Koski, William E., 4,161,517, Cl. 424-48.000.

Kothe, Dieter: *See*—
Dangeleit, Siegfried; and Kothe, Dieter, 4,161,209, Cl. 164-446.000.

Kotzsch, Hans-Joachim; Draese, Rudiger; and Vahlensieck, Hans-Joachim, to Dynamit Nobel Aktiengesellschaft. Cleavage of silicon-to-carbon bonds by means of hydrogen halide. 4,161,486, Cl. 260-448.20E.

Koyama, Kenichi: *See*—
Agatsuma, Ko; Koyama, Kenichi; Todoriki, Itaru; Yamaguchi, Tetsuo; Kohno, Osamu; and Saito, Takashi, 4,161,062, Cl. 29-599.000.

Kraeutle, Karl J., to United States of America, Navy. Method and apparatus for measuring adhesion of particulate materials. 4,161,114, Cl. 73-15.600.

Kraftwerk Union Aktiengesellschaft: *See*—
Gottschlich, Herbert; Koch, Christian; and Kunstle, Konrad, 4,161,428; Cl. 196-14.520.

Krakovsky, Boris D.: *See*—
Korsakov-Bogatkov, Sergei M.; Krakovsky, Boris D.; Nikitkin, Vasily D.; Onosovsky, Evgeny V.; Pronko, Vladimir G.; Stolper, Leonid M.; and Chernyshev, Boris A., 4,161,107, Cl. 62-117.000.

Krecher, Josef: *See*—
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Krieger, Karl, to Maschinenfabrik GmbH & Co. Hydraulic jack control device. 4,161,136, Cl. 91-461.000.

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Ladacki, Michael, to Rockwell International Corporation. Ignition of hydrazine-type monopropellants. 4,161,104, Cl. 60-218.000.

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Lakhani, Kishor M. Two side multi roller toner station for electrographic non-impact printer. 4,161,141, Cl. 101-1.000.

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Larson, Harold D.: *See—*
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Larson, William C., to Colt Industries Operating Corp. Dashpot apparatus including a flexible diaphragm piston. 4,161,241, Cl. 188-298.000.

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Le Simplex: *See—*
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Leach, George S., to Electronic Memories & Magnetics Corporation. Automatic refresh memory cell. 4,161,791, Cl. 365-222.000.

Leding, Francis R.: *See—*
Page, John; and Leding, Francis R., 4,161,390, Cl. 432-102.000.

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Lehr, Marvin H., to B. F. Goodrich Company, The. Impact modified vinyl chloride polymer composition. 4,161,472, Cl. 525-4.000.

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Lenard, William M.; and Taylor, Lynn J., to Owens-Illinois, Inc. Protective coating for glass substrate. 4,161,556, Cl. 427-385.00A.

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Leong, Basil K. J., to International Research and Development Corp. Instantaneously emptiable externally mounted animal food tray. 4,161,159, Cl. 119-18.000.

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Levesque, Clarence N. Panels for use in constructing building wall and building walls including such panels. 4,161,087, Cl. 52-62.000.

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Lu, Chin H., to Xerox Corporation. Coating magnetite with polyacid. 4,161,454, Cl. 252-62.10P.
Lubrizol Corporation, The: *See*—
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Lund, Kenneth, to Edgar Pickering (Blackburn) Limited. Looper mechanism for a tufting machine. 4,161,147, Cl. 112-79.00R.
Lundgren, Bo T.: *See*—
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Lytle, R. Jeffrey; Lager, Darrel L.; Laine, Edwin F.; and Davis, Donald T., to United States of America, Energy. Method for locating underground anomalies by diffraction of electromagnetic waves passing between spaced boreholes. 4,161,687, Cl. 324-6.000.
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Maffrand, Jean P., to PARCOR. Process for the preparation of thieno(2,3-c)- and thieno(3,2-c)pyridines. 4,161,599, Cl. 546-114.000.
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Maier, Heribert, to BBC Brown, Boveri & Company Limited. Arc extinguishing arrangement for gas blast type circuit breaker. 4,161,636, Cl. 200-148.00A.
Makovec, Donald J.; and Hutson, Thomas, Jr., to Phillips Petroleum Company. HF alkylation introducing separate olefins in vertically extended reactor. 4,161,497, Cl. 585-714.000.
Malcolm, Robert B.; and McDaniel, Clarence E., to Motorola, Inc. Standardized digital logic chip. 4,161,662, Cl. 307-213.000.
Malmgren, Arthur L.; and Johnson, Bryan E. Fluid metering and mixing device having inlet and outlet valves. 4,161,264, Cl. 222-135.000.
Mangold, Helmut: *See*—
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Markessini, Andrew C., to Teukros A.G. Reactive catalyst for amino resins. 4,161,467, Cl. 260-29.40R.
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Masham, Roger D., to Xerox Corporation. Apparatus for synchronizing movement between an optical scanning system and an imaging member. 4,161,359, Cl. 355-8.000.
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Massey-Ferguson Inc.: *See*—
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McCormick, Ronald O., to Owens-Corning Fiberglas Corporation. Method of welding tubular members. 4,161,646, Cl. 219-121.0EM.
McCracken, Oliver W., to Otis Engineering Corporation. Microprocessor computerized pressure/temperature/time down-hole recorder. 4,161,782, Cl. 364-571.000.
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Messick, Louis J., to United States of America, Navy. Microwave InP/SiO_2 insulated gate field effect transistor. 4,161,739, Cl. 357-23.000.
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Metzger, Gerhard, to Transfertex Thermodruck-system GmbH. Printed textile web material. 4,161,563, Cl. 428-233.000.
Meyer, Burton C.: *See—*
Katzman, Allison W.; Schoenfield, Palmer J.; and Meyer, Burton C., 4,161,081, Cl. 46-11.000.
Meyer, Hans F.: *See—*
Stossberg, Udo; Frania, Josef; Meyer, Hans F.; and Kneuttinger, Alfrons, 4,161,134, Cl. 91-219.000.
Meyer, Willy; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, to Ciba-Geigy Corporation. Pesticidal 2-isopropyl-4-phenyl-3-butenoic acid benzyl esters. 4,161,535, Cl. 424-304.000.
Meyer, Willy: *See—*
Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Meyer, Willy, 4,161,536, Cl. 424-304.000.
Microwave Semiconductor Corp.: *See—*
Frey, Richard H., 4,161,740, Cl. 357-36.000.
Mifsud, Joseph F., to Exxon Production Research Company. Hydraulic synchronizing system for coordinating movement of the vibrator guide rods. 4,161,229, Cl. 181-114.000.
Miki, Yoshiteru: *See—*
Sano, Yoshihiro; Chiba, Tomio; Kudou, Hiroyuki; and Miki, Yoshiteru, 4,161,651, Cl. 250-199.000.
Milenkovic, Veljko: *See—*
Buday, John M.; Holmes, Lawrence B.; Milenkovic, Veljko; and Stevens, Bernard, 4,161,092, Cl. 53-244.000.
Miller, Conrad O. M.: *See—*
Gunsher, Jeffrey A.; Garner, Joseph L.; and Miller, Conrad O. M., 4,161,573, Cl. 526-64.000.
Miller, Philip C.: *See—*
Gregg, Robert M.; and Miller, Philip C., 4,161,673, Cl. 313-481.000.
Miller, Stewart M., to Merck & Co., Inc. Dextro and levo-6-oxo-2-piperidinecarboxylic acid quinine salts. 4,161,600, Cl. 546-135.000.
Miller, Thomas W.: *See—*
Wilson, Kenneth E.; and Miller, Thomas W., 4,161,583, Cl. 536-17.00A.
Mimura, Yoshiyuki: *See—*
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,161,457, Cl. 252-301.40R.
Minnesota Mining and Manufacturing Company: *See—*
Hampl, Edward F., Jr., 4,161,111, Cl. 72-60.000.
Wen, Richard Y.; LaFleur, Linda L.; Engel, Michael R.; and Lucas, Anthony J., 4,161,518, Cl. 424-52.000.
Winslow, John M.; and Maw, Ivan R., 4,161,408, Cl. 96-114.100.
Minolta Camera Kabushiki Kaisha: *See—*
Sahara, Masayoshi; and Nakai, Masaaki, 4,161,355, Cl. 354-51.000.
Misaka, Eiichi: *See—*
Terada, Atsusuke; Wachi, Kazuyuki; and Misaka, Eiichi, 4,161,538, Cl. 424-317.000.
Mitchell, Howard E., to Dresser Industries, Inc. Skewed inserts for an earth boring cutter. 4,161,225, Cl. 175-374.000.
Mitre Corporation, The: *See—*
Hopkins, Gregory T.; Dahod, Ashraf M.; Demarines, Victor A.; Meisner, Norman B.; and Willard, David G., 4,161,786, Cl. 364-900.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Akamatsu, Masahiko, 4,161,680, Cl. 318-722.000.
Shimada, Wataru; and Hiramoto, Seigo, 4,161,645, Cl. 219-137.00R.
Mitsui Shipbuilding & Engineering Co., Ltd.: *See—*
Kojima, Katumi, 4,161,447, Cl. 210-23.00H.
Mo och Domsjo Aktiebolag: *See—*
Ekeborg, Bo-Gunnar; and Lofgren, Stig-Gunnar, 4,161,322, Cl. 280-6.00R.
Mobil Oil Corporation: *See—*
Audeh, Costandi A.; and Chen, Nai Y., 4,161,442, Cl. 208-11.00R.
Chang, Clarence D., 4,161,489, Cl. 260-449.00R.
Moeglich, Karl, to Innova, Inc. Process and apparatus for reducing the level of contaminants in aqueous electrolytes containing the same. 4,161,435, Cl. 204-152.000.
Moerman, Nathan A. Conversion and control of electrical energy by electromagnetic induction. 4,161,772, Cl. 363-44.000.
Moffett, F. Wesley, Jr. Garden device and method of producing same. 4,161,085, Cl. 47-82.000.
Mohawk Valve Company: *See—*
Klyce, Thomas A., 4,161,309, Cl. 251-328.000.
Mohlenkamp, Marvin J., Jr.: *See—*
Bernhardt, Christian A.; and Mohlenkamp, Marvin J., Jr., 4,161,550, Cl. 426-533.000.
Moller, Rudolf; and Opel, Detlef, to WABCO Westinghouse GmbH. Integrated throttle for throttled air removal in multiple-way valves. 4,161,190, Cl. 137-596.180.
MolyCorp, Inc.: *See—*
Wilson, William G.; and Kay, D. Alan R., 4,161,400, Cl. 75-58.000.
Monarch Marking Systems, Inc.: *See—*
Bussard, Charles B., 4,161,271, Cl. 227-8.000.
Moncrieff-Yeates, Alexander J. Sliding fireplace andirons. 4,161,171, Cl. 126-298.000.
Monier, Jean C.: *See—*
Bulteau, Gerard; Acher, Jacques; and Monier, Jean C., 4,161,532, Cl. 424-274.000.
Monsanto Company: *See—*
Campbell, Robert H.; and Wilder, Gene R., 4,161,474, Cl. 260-45.9QA.
Moon, James: *See—*
Decker, Elmer L.; and Moon, James, 4,161,117, Cl. 73-141.00R.
Moore, David L.: *See—*
Johnson, Joseph E.; Ostop, John A.; and Moore, David L., 4,161,746, Cl. 357-73.000.
Moore, Donald C., to Allis-Chalmers Corporation. Mechanical means for increasing the grade of a flotation cell concentrate. 4,161,444, Cl. 209-169.000.
Moore, Robert: *See—*
Foulkes, Stanley C.; Moore, Robert; Ratcliffe, James; and Stephenson, James M., 4,161,503, Cl. 264-136.000.
Moores, Robert G., Jr.; and Hopkins, Charles E., Sr., to Black & Decker Inc. Power-driven drill and screwdriver. 4,161,242, Cl. 192-34.000.
Moran, Richard J., to McGraw-Edison Company. Proportional ground current relay. 4,161,761, Cl. 361-94.000.
Moreau, Bernard G. A.; and Jalin, Rene J. J., to Office National d'Etudes et de Recherches Aerospatiales. System for optically aiming a laser beam on to a target. 4,161,652, Cl. 250-203.00R.
Moreno, Emil F., to International Harvester Company. Loader boom assembly. 4,161,369, Cl. 414-722.000.
Morgan, William M.: *See—*
Barclay, Donald J.; and Morgan, William M., 4,161,432, Cl. 204-51.000.
Mori, Kan: *See—*
Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, 4,161,459, Cl. 252-352.000.
Mori, Yujiro: *See—*
Kanai, Takao; and Mori, Yujiro, 4,161,707, Cl. 334-7.000.
Mori, Zenichi: *See—*
Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, 4,161,459, Cl. 252-352.000.
Morimoto, Kiyoshi; Utamura, Yukihiko; and Takagi, Toshinori, to Futaba Denshi Kogyo K. K. Ionized-cluster-beam deposition process for fabricating p-n junction semiconductor layers. 4,161,418, Cl. 148-175.000.

Moritz, Alfred: *See—*
Regler, Dieter; and Moritz, Alfred, 4,161,167, Cl. 125-18.000.
Morrell, Jacque C. Process for the production of distillate fuels from oil shales and by-product therefrom. 4,161,441, Cl. 208-11.00R.
Morrison, Francis H.: *See—*
Horgan, John J.; and Morrison, Francis H., 4,161,103, Cl. 60-39.350.
Morrison, Frederick D., Jr. Trunk mount spare wheel carrier device. 4,161,267, Cl. 224-42.240.
Morrow, Jim B.; and Sotiropoulos, Peter G. Orthodontic bracket. 4,161,066, Cl. 32-14.00A.
Morton-Norwich Products, Inc.: *See—*
Pelosi, Stanford S., Jr., 4,161,479, Cl. 260-347.300.
Moser, Otto W.: *See—*
Thilo, Peer; and Moser, Otto W., 4,161,727, Cl. 340-518.000.
Moshkovsky, Evgeny I.: *See—*
Merzhanov, Alexandr G.; Borovinskaya, Inna P.; Karjuk, Gennady G.; Dubovitsky, Fedor I.; Prokudina, Valentina K.; Ratnikov, Viktor I.; Bochko, Anatoly V.; Moshkovsky, Evgeny I.; Sharivker, Semen J.; and Krizhanovsky, Sergei S., 4,161,512, Cl. 423-440.000.
Motorola, Inc.: *See—*
Groves, Stanley E.; Schriber, Gene A.; Spinks, Brian M.; Baker, Richard M.; Daly, Thomas C.; and Means, Rodney J., 4,161,787, Cl. 364-900.000.
Malcolm, Robert B.; and McDaniel, Clarence E., 4,161,662, Cl. 307-213.000.
Piesinger, Gregory H., 4,161,733, Cl. 343-100.0SA.
Motorola Israel Ltd.: *See—*
Cohen, Yitzhak; Brandman, Yigal; and Eckstien, Zvi, 4,161,718, Cl. 340-146.1BA.
Mozyakov, Vladimir I.: *See—*
Berber, Viktor A.; Mozyakov, Vladimir I.; and Khodosov, Nikolai A., 4,161,275, Cl. 233-31.000.
MTD Products Inc.: *See—*
Nofel, Thomas J., 4,161,639, Cl. 200-157.000.
Mueller, Karl F., to Ciba-Geigy Corporation. Fluorinated amphoteric and cationic surfactants. 4,161,590, Cl. 544-159.000.
Mueller, Karl F., to Ciba-Geigy Corporation. Fluorinated amphoteric and cationic surfactants containing a pyridinium moiety. 4,161,602, Cl. 546-335.000.
Mueller, Otto, Jr., to Massey-Ferguson Inc. Control valve. 4,161,189, Cl. 137-514.700.
Muhlberg, Erhard, to Siemens Aktiengesellschaft. Internal combustion engine fuel supply system. 4,161,164, Cl. 123-122.00G.
Muller, Friedrich: *See—*
Heide, Wilfried; Muller, Friedrich; Otto, Klaus; and Salanki, Tibor, 4,161,213, Cl. 165-168.000.
Muller, Werner H., to Hoechst Aktiengesellschaft. Dehydrogenation of cyclic ketones to beta-naphthols. 4,161,615, Cl. 568-740.000.
Munn, Clyde. Serving cart. 4,161,234, Cl. 186-1.00R.
Murphy, Pierce M. Connector for tubes of square cross-section. 4,161,375, Cl. 403-169.000.
Muschaweck, Roman: *See—*
Bormann, Dieter; Merkel Wulf; and Muschaweck, Roman, 4,161,531, Cl. 424-274.000.
Sturm, Karl; and Muschaweck, Roman, 4,161,533, Cl. 424-285.000.
Myers, John W.; and Harris, Jesse R., to Phillips Petroleum Company. Olefin disproportionation over silica-rare earth metal oxide catalysts. 4,161,463, Cl. 252-455.00R.
Nakai, Masaaki: *See—*
Sahara, Masayoshi; and Nakai, Masaaki, 4,161,355, Cl. 354-51.000.
Nakajima, Minoru: *See—*
Katsuda, Yoshio; Nakajima, Minoru; and Fujita, Toshio, 4,161,537, Cl. 424-304.000.
Nakamizo, Keiichi: *See—*
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Nakamura, Satoshi: *See—*
Takeda, Yutaka; Nakamura, Satoshi; Chinone, Naoki; Nakashima, Hisao; and Kurata, Kazuhiro, 4,161,701, Cl. 331-94.50H.
Nakamura, Syoji, to Kyoei Seiko Kabushiki Kaisha. Electric arc furnace for steel making, with no refractory bricks at the furnace wall. 4,161,620, Cl. 13-32.000.
Nakashima, Hisao: *See—*
Takeda, Yutaka; Nakamura, Satoshi; Chinone, Naoki; Nakashima, Hisao; and Kurata, Kazuhiro, 4,161,701, Cl. 331-94.50H.
Nakayama, Tadaharu, to Sumitomo Electric Industries, Ltd. Cable fault locating apparatus having an earth current canceller. 4,161,688, Cl. 324-52.000.
Narita, Kinichiro: *See—*
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,161,457, Cl. 252-301.40R.
National Machinery Company, The: *See—*
Kline, Gaylen O., 4,161,113, Cl. 72-344.000.
National Research Development Corporation: *See—*
Strawson, Kenneth H.; and Ramsey, Joseph, 4,161,377, Cl. 425-3.000.
Strawson, Kenneth H.; and Spencer, Gerald, 4,161,378, Cl. 425-3.000.
Nawa, Hideo; and Takikawa, Yujiro, to Aisin Seiki Kabushiki Kaisha. Thread winding mechanism for sewing machine. 4,161,153, Cl. 112-279.000.
NCR Corporation: *See—*
Parikh, Bipin D.; Patnaik, Haresh C.; Patel, Bhagubhai K.; Dharia, Prabodh M.; Kurtz, John J.; Jenkins, Alfred D.; and Mahajan, Prakash Y., 4,161,719, Cl. 340-147.0SY.
Sacher, Eric; and Trebelhorn, Thomas E., 4,161,276, Cl. 235-302.000.
Nelsen, Roger J., to Gulf & Western Manufacturing Company. Anti-friction gibs for presses. 4,161,342, Cl. 308-6.00R.
Nema, Suresh K., to Indian Space Research Organisation, The. Production of polyols containing basic nitrogen. 4,161,482, Cl. 260-404.000.
Nemit, Jeffrey T.; and Wolfson, Ronald I., to International Telephone and Telegraph Corporation. Low level controllable radio frequency phase shifter. 4,161,705, Cl. 333-156.000.
Neri, Rudolph O.; and Topliss, John G., to Schering Corporation. Antiandrogenic agents and methods for the treatment of androgen dependent disease states. 4,161,540, Cl. 424-324.000.
Nicholas, Paul P., to B. F. Goodrich Company, The. Devulcanized rubber composition and process for preparing same. 4,161,464, Cl. 260-2.300.
Nicklas, Georg: *See—*
Priemer, Joachim; Nicklas, Georg; and Schulz, Nikolaus, 4,161,481, Cl. 260-369.000.
Nicks, Robert W.; and King, Larry. Smoke filtering ashtrays. 4,161,181, Cl. 131-231.000.
Nicolaisen, Bernard H., to Olin Corporation. Solar energy collection system. 4,161,170, Cl. 126-271.000.
Nidola, Antonio: *See—*
De Nora, Oronzio; Nidola, Antonio; and Spaziante, Placido M., 4,161,433, Cl. 204-98.000.
Nikitkin, Vasily D.: *See—*
Korsakov-Bogatkov, Sergei M.; Krakovsky, Boris D.; Nikitkin, Vasily D.; Onosovsky, Evgeny V.; Pronko, Vladimir G.; Stolper, Leonid M.; and Chernyshev, Boris A., 4,161,107, Cl. 62-117.000.
Nippon Columbia Kabushikikaisha: *See—*
Matsuda, Hitoshi, 4,161,631, Cl. 179-100.41D.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Yamada, Shigeru; and Aoki, Eiichiro, 4,161,128, Cl. 84-1.260.
Nippon Hoso Kyokai: *See—*
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, 4,161,457, Cl. 252-301.40R.
Nippon Piston Ring Co., Ltd.: *See—*
Sakamaki, Hiroshi, 4,161,317, Cl. 277-25.000.
Nippon Telegraph and Telephone Public Corporation: *See—*
Fujikata, Kenji; Yokozawa, Norio; and Shibayama, Akinori, 4,161,700, Cl. 328-147.000.
Nishimura, Satoru: *See—*
Inui, Takayasu; and Nishimura, Satoru, 4,161,227, Cl. 180-70.00R.
Nissan Motor Company, Limited: *See—*
Hagiwara, Yutaca, 4,161,105, Cl. 60-561.000.
Nix, Edwin L.; and Davenport, Bobby E. Truck bed liner. 4,161,335, Cl. 296-39.00R.
Noda, Etsunosuke: *See—*
Ishizuka, Kenzo; Fujisawa, Hiroshi; and Noda, Etsunosuke, 4,161,527, Cl. 424-246.000.
Nofel, Thomas J., to MTD Products Inc. Handle safety switch. 4,161,639, Cl. 200-157.000.
Nomiya, Kosei: *See—*
Kawagoe, Hiroto; and Nomiya, Kosei, 4,161,664, Cl. 307-304.000.
Nomura, Yoshihisa: *See—*
Kawaguchi, Hiroshi; and Nomura, Yoshihisa, 4,161,339, Cl. 303-24.00F.
Norman, John B., to Recognition Equipment Incorporated. Beam separating prism system. 4,161,349, Cl. 350-173.000.
Northern Telecom Limited: *See—*
Szpakowski, Bronislaw T., 4,161,773, Cl. 363-49.000.
Norum, Edward M., Jr.: *See—*
Holloway, Huland L.; and Norum, Edward M., Jr., 4,161,292, Cl. 239-11.000.
Nowack, Helmut; and Rappange, Adelbert, to BBC Brown, Boveri & Company Limited. Gastight penetration. 4,161,316, Cl. 277-9.000.
Nowak, Hubert H., to Tenneco., Inc. Monolithic converter. 4,161,509, Cl. 422-179.000.
Nutt, Ruth F.: *See—*
Veber, Daniel F.; Holly, Frederick W.; Strachan, Robert G.; Paleveda, William J.; Nutt, Ruth F.; and Hirschmann, Ralph F., 4,161,521, Cl. 424-177.000.
Nutz, Karl-Diether, to Licentia Patent-Verwaltungs-G.m.b.H. Schmitt trigger square wave oscillator. 4,161,703, Cl. 331-111.000.
Nysscn, James. Reinforced smooth flow pipe. 4,161,194, Cl. 138-154.000.
Oakes, William. Snow scoop. 4,161,073, Cl. 37-130.000.
Oberlinner, Andreas: *See—*
Baumann, Hans; and Oberlinner, Andreas, 4,161,589, Cl. 544-70.000.
Obrist, Albert. Stopper arrangement for bottles. 4,161,258, Cl. 215-302.000.
Oda, Donald J.: *See—*
Caouette, Kenneth O.; Fortescue, George H.; Zaman, Mohammad K.; and Oda, Donald J., 4,161,650, Cl. 250-199.000.
Oelke, Erwin S., to Smith International, Inc. Pressure relief valve for rock bits. 4,161,223, Cl. 175-228.000.
Office National d'Etudes et de Recherches Aerospatiales: *See—*
Moreau, Bernard G. A.; and Jalin, Rene J. J., 4,161,652, Cl. 250-203.00R.

Ohno, Akira, to Gallon & Company. Method of improving the flavor of previously dried green coffee beans. 4,161,549, Cl. 426-460.000.
Ohtsu, Hiroshi: *See—*
Kaieda, Nobuo; Kawakami, Kenji; Okano, Yoshihiro; and Ohtsu, Hiroshi, 4,161,678, Cl. 318-641.000.
Okamoto, Yasunari: *See—*
Itoh, Tsutomu; Sakurai, Munekazu; Yamamoto, Masahiro; and Okamoto, Yasunari, 4,161,765, Cl. 361-226.000.
Okano, Yoshihiro: *See—*
Kaieda, Nobuo; Kawakami, Kenji; Okano, Yoshihiro; and Ohtsu, Hiroshi, 4,161,678, Cl. 318-641.000.
Oku, Masakazu: *See—*
Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, 4,161,459, Cl. 252-352.000.
Olin Corporation: *See—*
Nicolaisen, Bernard H., 4,161,170, Cl. 126-271.000.
Yarwood, John C.; Yun, Ik Y.; Tyler, Derek E.; and Kindlmann, Peter J., 4,161,206, Cl. 164-49.000.
Olofson, Roy A.; and Pepe, Joseph P., to Research Corporation. N-alkyl-14-hydroxymorphinans and derivatives. 4,161,597, Cl. 546-15.000.
Olsson, Per-Inge: *See—*
Forberg, Sevald; and Olsson, Per-Inge, 4,161,513, Cl. 423-598.000.
Olympia Werke AG: *See—*
Chvatlinsky, Kurt, 4,161,373, Cl. 400-175.000.
Omansky, Martin B. Modular building structure system. 4,161,089, Cl. 52-227.000.
Onoda Cement Co., Ltd.: *See—*
Itoh, Tsutomu; Sakurai, Munekazu; Yamamoto, Masahiro; and Okamoto, Yasunari, 4,161,765, Cl. 361-226.000.
Onosovsky, Evgeny V.: *See—*
Korsakov-Bogatkov, Sergei M.; Krakovsky, Boris D.; Nikitkin, Vasily D.; Onosovsky, Evgeny V.; Pronko, Vladimir G.; Stolper, Leonid M.; and Chernyshev, Boris A., 4,161,107, Cl. 62-117.000.
Onoue, Shoji, to Denki Onkyo Co., Ltd. Flyback transformer with high tension connector. 4,161,776, Cl. 363-146.000.
Opel, Detlef: *See—*
Moller, Rudolf; and Opel, Detlef, 4,161,190, Cl. 137-596.180.
Oppolzer, Gottfried. Windmill. 4,161,370, Cl. 416-17.000.
Oronzio De Nora Impianti Elettrochimici S.p.A.: *See—*
De Nora, Oronzio; Nidola, Antonio; and Spaziante, Placido M., 4,161,433, Cl. 204-98.000.
De Nora, Oronzio; and De Nora, Vittorio, 4,161,438, Cl. 204-266.000.
Osborne, Melville W.; and Cohen, Michael R., to Hoffmann-La Roche Inc. Method of treating hypertension. 4,161,520, Cl. 424-115.000.
Oshima, Takao: *See—*
Yasui, Seimei; and Oshima, Takao, 4,161,571, Cl. 526-90.000.
Ost, Clarence S. High-security cable television access system. 4,161,751, Cl. 358-114.000.
Ost, Walter: *See—*
Thomas, Klaus; Ost, Walter; and Curtze, Jurgen, 4,161,528, Cl. 424-273.00R.
Ostop, John A.: *See—*
Johnson, Joseph E.; Ostop, John A.; and Moore, David L., 4,161,746, Cl. 357-73.000.
Osuna-Diaz, Jesus M., to Incoe Corporation. Nozzle for injection molding machines. 4,161,386, Cl. 425-549.000.
Otis Engineering Corporation: *See—*
McCracken, Oliver W., 4,161,782, Cl. 364-571.000.
Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, to Toyo Seikan Kaisha, Ltd.; and Kao Soap Co., Ltd. Composition for chemically peeling fruits and vegetables. 4,161,459, Cl. 252-352.000.
Ottaway, Gerald H.: *See—*
Bailey, Jack H.; and Ottaway, Gerald H., 4,161,753, Cl. 358-128.000.
Otto, Klaus: *See—*
Heide, Wilfried; Muller, Friedrich; Otto, Klaus; and Salanki, Tibor, 4,161,213, Cl. 165-168.000.
Owens-Corning Fiberglas Corporation: *See—*
Greene, Neil E.; Srinivasan, Seshadri; and Stenger, Leonard A., 4,161,396, Cl. 65-1.000.
McCormick, Ronald O., 4,161,646, Cl. 219-121.0EM.
Owens-Illinois, Inc.: *See—*
Lenard, William M.; and Taylor, Lynn J., 4,161,556, Cl. 427-385.00A.
Owens, Kenneth B.: *See—*
Dilgren, Richard E.; and Owens, Kenneth B., 4,161,217, Cl. 166-252.000.
P.R.K., Inc.: *See—*
Dunham, Philip N., 4,161,056, Cl. 29-402.000.
Padovani, Pietro, to Industrie Specializzate Articoli Plastici S.p.A. Apparatus for producing a container matrix. 4,161,382, Cl. 425-291.000.
Pagani, George B. Fishing line submerging device. 4,161,078, Cl. 43-43.130.
Page, John; and Leding, Francis R., to United States Gypsum Company. Calcining kettle having multi-pass heating system. 4,161,390, Cl. 432-102.000.
Paige, Walter W., Jr.: *See—*
Koeln, Harold E.; and Paige, Walter W., Jr., 4,161,374, Cl. 401-116.000.
Pako Corporation: *See—*
Anderson, Richard D.; and Wedel, John A., 4,161,365, Cl. 355-75.000.
Palafox, Federico V., to Procesos Plasticos, S.A. Stackable container for bottles and the like. 4,161,259, Cl. 220-21.000.
Paleveda, William J.: *See—*
Veber, Daniel F.; Holly, Frederick W.; Strachan, Robert G.; Paleveda, William J.; Nutt, Ruth F.; and Hirschmann, Ralph F., 4,161,521, Cl. 424-177.000.
Palmer, John P.: *See—*
Clinch, Colin W. F.; Harley, David N.; and Palmer, John P., 4,161,307, Cl. 251-206.000.
Paper Converting Machine Company: *See—*
Hartnig, Richard E., 4,161,091, Cl. 53-206.000.
Pappo, Raphael; and Garland, Robert B., to G. D. Searle & Co. Intermediates for the synthesis of 4-demethoxydaunorubicin. 4,161,480, Cl. 260-365.000.
PARCOR: *See—*
Maffrand, Jean P., 4,161,599, Cl. 546-114.000.
Pardes, Herman I.; and Sherburne, Frederick B., to United States of America, Army. Laser rangefinder trainer. 4,161,070, Cl. 35-25.000.
Parikh, Bipin D.; Patnaik, Haresh C.; Patel, Bhagubhai K.; Dharia, Prabodh M.; Kurtz, John J.; Jenkins, Alfred D.; and Mahajan, Prakash Y., to NCR Corporation. System for controlling synchronization in a digital communication system. 4,161,719, Cl. 340-147.0SY.
Parker, Frank; and Parker, Leslie M. Granulator with forced feed assembly. 4,161,296, Cl. 241-152.00A.
Parker-Hannifin Corporation: *See—*
Jorgensen, Richard G., 4,161,188, Cl. 137-386.000.
Parker, Herbert W., to Allied Chemical Corporation. Melting apparatus. 4,161,391, Cl. 432-209.000.
Parker, Leslie M.: *See—*
Parker, Frank; and Parker, Leslie M., 4,161,296, Cl. 241-152.00A.
Parker, Merrill D. Metal fence post puller. 4,161,310, Cl. 254-30.000.
Paschke, Richard H.: *See—*
Clarke, Robert A.; Kuhl, Peter J.; and Paschke, Richard H., 4,161,420, Cl. 156-73.300.
Paspek, Stephen C., Jr.; and Every, William A., to Standard Oil Company (Ohio). Recovery of acrylic acid from quench bottoms by the addition of aluminum chloride. 4,161,613, Cl. 562-600.000.
Patel, Bhagubhai K.: *See—*
Parikh, Bipin D.; Patnaik, Haresh C.; Patel, Bhagubhai K.; Dharia, Prabodh M.; Kurtz, John J.; Jenkins, Alfred D.; and Mahajan, Prakash Y., 4,161,719, Cl. 340-147.0SY.
Patnaik, Haresh C.: *See—*
Parikh, Bipin D.; Patnaik, Haresh C.; Patel, Bhagubhai K.; Dharia, Prabodh M.; Kurtz, John J.; Jenkins, Alfred D.; and Mahajan, Prakash Y., 4,161,719, Cl. 340-147.0SY.
Patrick, John P., to United Technologies Corporation. Wind turbine generator having integrator tracking. 4,161,658, Cl. 290-44.000.
Patterson, William W., III; and Grapes, Eugene F. Adjustable bulkhead assembly. 4,161,145, Cl. 105-376.000.
Paul, Maynard C.: *See—*
Torok, Ernest J.; Paul, Maynard C.; and Lo, David S., 4,161,789, Cl. 365-87.000.
Paul, William A. Inspection fixture. 4,161,251, Cl. 209-604.000.
Pavitt, William H., Jr.: *See—*
Harris, Frederick E., II; and Pavitt, William H., Jr., 4,161,176, Cl. 128-155.000.
Pellico, Michael A., to Denton Industries, Inc. Settable dental compositions with polyterpene binder. 4,161,410, Cl. 106-35.000.
Pelosi, Stanford S., Jr., to Morton-Norwich Products, Inc. 5-(4-Chlorophenyl)furfurylurea. 4,161,479, Cl. 260-347.300.
Penn Corporation: *See—*
Koeln, Harold E.; and Paige, Walter W., Jr., 4,161,374, Cl. 401-116.000.
Pepe, Joseph P.: *See—*
Olofson, Roy A.; and Pepe, Joseph P., 4,161,597, Cl. 546-15.000.
Performance Industries, Inc.: *See—*
Boyesen, Eyvind, 4,161,163, Cl. 123-73.00A.
Perry, Andrew W., to Beckman Instruments, Inc. Enzymatic reagent system for total cholesterol assay using oxygen-rate method. 4,161,425, Cl. 435-11.000.
Philip A. Hunt Chemical Corp.: *See—*
Bulloch, David K., 4,161,406, Cl. 96-55.000.
Phillips Petroleum Company: *See—*
Makovec, Donald J.; and Hutson, Thomas, Jr., 4,161,497, Cl. 585-714.000.
Myers, John W.; and Harris, Jesse R., 4,161,463, Cl. 252-455.00R.
Piasecki, Edwin S.: *See—*
Brussels, Nathan E.; and Piasecki, Edwin S., 4,161,169, Cl. 126-271.000.
Pickering, Donald E., to Airborne Life Support Systems, Inc. Life support chamber for infants, method and system. 4,161,172, Cl. 128-1.00B.
Pierce, Donald C. Kit for decorating border panel of picture mats. 4,161,250, Cl. 206-575.000.
Piesinger, Gregory H., to Motorola, Inc. Null steering apparatus including weight oscillation eliminating means. 4,161,733, Cl. 343-100.0SA.
Pilz, Gilbert B.; and Young, George H., to Gulf & Western Manufacturing Company. Tractor to trailer connect system. 4,161,329, Cl. 280-474.000.
Pistorius, Rudolf: *See—*
Konz, Elmar; and Pistorius, Rudolf, 4,161,614, Cl. 568-670.000.
Plattner, Jacob J.; Voss, Houston F.; and Magic, Susan E., to Abbott Laboratories. Enzymatic substrates. 4,161,488, Cl. 260-455.00R.

Plessey Handel und Investments AG: *See—*
Bennett, James P.; and Harms, David C., 4,161,630, Cl. 179-18.0EB.
Pohacker, Josef: *See—*
Ritter, Klaus; Ritter, Gerhard; Ritter, Josef; Pohacker, Josef; and Jahrbacher, Gert, 4,161,110, Cl. 72-7.000.
Polaroid Corporation: *See—*
Erlichman, Irving, 4,161,749, Cl. 358-75.000.
Wray, William R., 4,161,758, Cl. 360-90.000.
Polukhin, Valentin P.: *See—*
Bakhalov, Vladimir I.; Volvenkov, Gennady V.; Polukhin, Valentin P.; Starokadomsky, Vadim S.; and Ter-Bogdasarov, Arkady V., 4,161,148, Cl. 112-110.000.
Pool Company: *See—*
Armstong, James E., 4,161,376, Cl. 405-196.000.
Popov, Valery G.: *See—*
Bocharov, Jury N.; Kabanov, Viktor A.; Martynova, Marina A.; Popov, Valery G.; Smetanjuk, Vladimir I.; and Fedorov, Viktor V., 4,161,462, Cl. 252-429.00B.
Porret, Daniel: *See—*
Batzer, Hans; Habermeier, Jurgen; and Porret, Daniel, 4,161,594, Cl. 544-302.000.
Porter, Chester D., to Allied Chemical Corporation. Transfer line exchanger inlet cone. 4,161,192, Cl. 138-44.000.
Porter, Norman A.: *See—*
Leeson, Stanley J.; and Porter, Norman A., 4,161,754, Cl. 358-185.000.
Powell, Joe A.; Messerly, James W.; and Shippy, Ronald L., to B. F. Goodrich Company, The. Puncture sealing tire. 4,161,202, Cl. 152-347.000.
Prentice, William J., Jr.: *See—*
Hrycik, Kenneth S.; Leonhardt, John H.; and Prentice, William J., Jr., 4,161,617, Cl. 13-6.000.
Presby, Herman M.: *See—*
Marcuse, Dietrich; and Presby, Herman M., 4,161,656, Cl. 250-459.000.
Prestridge, Floyd L.: *See—*
Warren, Kenneth W.; and Prestridge, Floyd L., 4,161,439, Cl. 204-306.000.
Price, John A.; and Stange, Hugo, to Avtex Fibers Inc. Cationic dyeable copolyesters. 4,161,577, Cl. 528-173.000.
Priemer, Joachim; Nicklas, Georg; and Schulz, Nikolaus, to Bayer Aktiengesellschaft. Process for the isolation of purified anthraquinone. 4,161,481, Cl. 260-369.000.
Priesemuth, Wolfgang. Pushbutton switch. 4,161,637, Cl. 200-153.00J.
Pringle, Ronald E., to Camco, Incorporated. Piston actuated well safety valve. 4,161,219, Cl. 166-324.000.
Pringle, William L., to United States Steel Corporation. Ratchet action slack adjuster. 4,161,240, Cl. 188-196.0BA.
Procedyne, Inc.: *See—*
Staffin, Herbert K.; and Staffin, Robert, 4,161,389, Cl. 432-58.000.
Procesos Plasticos, S.A.: *See—*
Palafox, Federico V., 4,161,259, Cl. 220-21.000.
Procter & Gamble Company, The: *See—*
Bernhardt, Christian A.; and Mohlenkamp, Marvin J., Jr., 4,161,550, Cl. 426-533.000.
Proctor & Schwartz, Inc.: *See—*
Sturgeon, Lloyd F., 4,161,567, Cl. 428-594.000.
Prokudina, Valentina K.: *See—*
Merzhanov, Alexandr G.; Borovinskaya, Inna P.; Karjuk, Gennady G.; Dubovitsky, Fedor I.; Prokudina, Valentina K.; Ratnikov, Viktor I.; Bochko, Anatoly V.; Moshkovsky, Evgeny I.; Sharivker, Semen J.; and Krizhanovsky, Sergei S., 4,161,512, Cl. 423-440.000.
Pronko, Vladimir G.: *See—*
Korsakov-Bogatkov, Sergei M.; Krakovsky, Boris D.; Nikitkin, Vasily D.; Onosovsky, Evgeny V.; Pronko, Vladimir G.; Stolper, Leonid M.; and Chernyshev, Boris A., 4,161,107, Cl. 62-117.000.
Pronovost, Normand. Ditch digger with adjustable side wings. 4,161,072, Cl. 37-93.000.
Pye, David S., to Union Oil Company of California. Method for reducing contaminant emissions in gas drilling operations. 4,161,222, Cl. 175-66.000.
Quantor Corporation: *See—*
Kahle, Rolf D., 4,161,363, Cl. 355-68.000.
Quinlan, Kenneth P.; and Hutta, Joseph J., to United States of America, Air Force. Method for separating trialuminum nickelide fibers from an aluminum matrix. 4,161,434, Cl. 204-146.000.
R. B. Cybernetris (1970) Ltd.: *See—*
Sewell, Vincent N. R., 4,161,460, Cl. 252-426.000.
Raffenberg, Wolfgang: *See—*
Eckhardt, Friedhelm; Raffenberg, Wolfgang; and Klein, Axel, 4,161,312, Cl. 271-3.000.
Ragaly, Istvan, to Robert Bosch GmbH. Dual voltage automotive on-board electrical network system. 4,161,684, Cl. 322-90.000.
Rain Bird Sprinkler Manufacturing Corporation: *See—*
Beamer, John D.; and Wichman, William J., 4,161,286, Cl. 239-230.000.
Ralston, Horace E.; Robinson, Edward L., Jr.; and Ralston, William K., deceased (by Ralston, Louise, executor), to International Harvester Company. Carrier and dispenser for cylindrical bales. 4,161,253, Cl. 414-25.000.
Ralston, Louise, executor: *See—*
Ralston, Horace E.; Robinson, Edward L., Jr.; and Ralston, William K., deceased, 4,161,253, Cl. 414-25.000.
Ralston, William K., deceased: *See—*
Ralston, Horace E.; Robinson, Edward L., Jr.; and Ralston, William K., deceased, 4,161,253, Cl. 414-25.000.
Ramsey, Joseph: *See—*
Strawson, Kenneth H.; and Ramsey, Joseph, 4,161,377, Cl. 425-3.000.
Ranger, Anton; and Uebel, Alexander, to Knorr-Bremse-Bowles-Fluidics GmbH. Adaptor for connection to a faucet. 4,161,191, Cl. 137-625.460.
Rank Xerox Limited: *See—*
Blake, Neil B., 4,161,362, Cl. 355-40.000.
Ransburg Corporation: *See—*
Bacsanyi, Thomas J.; and Harmon, Edward J., 4,161,666, Cl. 310-27.000.
Rappange, Adelbert: *See—*
Nowack, Helmut; and Rappange, Adelbert, 4,161,316, Cl. 277-9.000.
Rasberger, Michael: *See—*
Evans, Samuel; and Rasberger, Michael, 4,161,592, Cl. 544-198.000.
Rasmussen, Chris R., to McNeil Laboratories, Inc. Benzhydryl guanidines. 4,161,541, Cl. 424-326.000.
Ratcliffe, James: *See—*
Foulkes, Stanley C.; Moore, Robert; Ratcliffe, James; and Stephenson, James M., 4,161,503, Cl. 264-136.000.
Rathbun, Donald J.: *See—*
Getson, Edward F., Jr.; Kelley, John H.; Rathbun, Donald J.; and McLaughlin, Albert T., 4,161,778, Cl. 364-200.000.
Rathje, William C., to General Electric Company. Prime mover, method of operating such and circuit. 4,161,681, Cl. 318-783.000.
Ratnikov, Viktor I.: *See—*
Merzhanov, Alexandr G.; Borovinskaya, Inna P.; Karjuk, Gennady G.; Dubovitsky, Fedor I.; Prokudina, Valentina K.; Ratnikov, Viktor I.; Bochko, Anatoly V.; Moshkovsky, Evgeny I.; Sharivker, Semen J.; and Krizhanovsky, Sergei S., 4,161,512, Cl. 423-440.000.
Rattan, Horace E. Slow diffuser-air scent. 4,161,284, Cl. 239-43.000.
Raugulis, Indulis E.; Dewey, Craig D.; and Gundrum, Richard H., to Harnischfeger Corporation. Restraint means for overhead travelling crane. 4,161,144, Cl. 105-163.00R.
Raytheon Company: *See—*
Kits van Heyningen, Arent H., 4,161,629, Cl. 179-15.0BA.
Rebold, Jerome I., to CBS Inc. Airbrush. 4,161,289, Cl. 239-346.000.
Recognition Equipment Incorporated: *See—*
Norman, John B., 4,161,349, Cl. 350-173.000.
Recycling & Conservation, Inc.: *See—*
Howells, John N. M., 4,161,252, Cl. 211-126.000.
Regan, Glen B. Polishing slurry of xanthan gum and a dispersing agent. 4,161,394, Cl. 51-302.000.
Regan, John J. Mattress. 4,161,045, Cl. 5-464.000.
Regler, Dieter; and Moritz, Alfred, to Wacker-Chemitronic Gesellschaft fur Elektronik Grundstoffe mbH. Lap cutting blades. 4,161,167, Cl. 125-18.000.
Reid, Allen F.; and Halff, Albert H. Temperature increase system. 4,161,210, Cl. 165-1.000.
Reinecke, Erich; Ulrich, Helmut; Haas, Arnold; and Kolmitz, Willi, to WABCO Westinghouse GmbH. Actuating device for pressure medium brake systems. 4,161,341, Cl. 303-52.000.
Remond, Jean-Pierre: *See—*
Vitat, Jean-Claude; Remond, Jean-Pierre; and Thebault, Jean-Robert, 4,161,450, Cl. 252-194.000.
Republic Steel Corporation: *See—*
Markarian, Kegham M.; Matty, Richard D.; and Svekric, Fred E., 4,161,619, Cl. 13-18.00C.
Resch, Darrel R.: *See—*
Erb, Elisha W.; and Resch, Darrel R., 4,161,281, Cl. 239-8.000.
Erb, Elisha W.; and Resch, Darrel R., 4,161,282, Cl. 239-8.000.
Research Corporation: *See—*
Olofson, Roy A.; and Pepe, Joseph P., 4,161,597, Cl. 546-15.000.
Rheinisch-Westfalisches Elektrizitatswerk Aktiengesellschaft: *See—*
Faber, Peter, 4,161,569, Cl. 429-234.000.
Rhone-Poulenc Industries: *See—*
Vitat, Jean-Claude; Remond, Jean-Pierre; and Thebault, Jean-Robert, 4,161,450, Cl. 252-194.000.
Ricoh Co., Ltd.: *See—*
Enomoto, Takamichi; and Sakuma, Seiiti, 4,161,404, Cl. 96-1.50R.
Yanagawa, Nobuyuki; Watanabe, Tsutomu; and Tagawa, Kazuaki, 4,161,644, Cl. 219-216.000.
Rikagaku Kenkyusho: *See—*
Ando, Tadahiko; Shibata, Takehiko; Ikawa, Shukuko; and Kim, Cholung, 4,161,424, Cl. 435-199.000.
Riley, Edwin A. Process for recovery of hydrocarbons. 4,161,047, Cl. 166-266.000.
Rinehart, Harry A.: *See—*
Ciaccio, Charles J.; and Rinehart, Harry A.. 4,161,077, Cl. 43-26.100.
Ripple, Warren. Loudspeaker equipment. 4,161,230, Cl. 181-148.000.
Riso, Vladimir: *See—*
Dubil, James F.; Falcoz, Alain M.; Glaise, Rene J.; Jacquart, Christian A.; Leighton, Howard N.; Riso, Vladimir; and Wilfinger, Raymond J., 4,161,706, Cl. 333-165.000.
Ritter, Gerhard: *See—*
Ritter, Klaus; Ritter, Gerhard; Ritter, Josef; Pohacker, Josef; and Jahrbacher, Gert, 4,161,110, Cl. 72-7.000.
Ritter, Josef: *See—*
Ritter, Klaus; Ritter, Gerhard; Ritter, Josef; Pohacker, Josef; and Jahrbacher, Gert, 4,161,110, Cl. 72-7.000.

Ritter, Klaus; Ritter, Gerhard; Ritter, Josef; Pohacker, Josef; and Jahrbacher, Gert, to EVG Entwicklungs- und Verwertungs-Gesellschaft mbH. Automatic control device for a bending machine. 4,161,110, Cl. 72-7.000.

RND Company: *See—*
Dashow, Russell N., 4,161,249, Cl. 206-459.000.

Robert Bosch GmbH: *See—*
Bosch, Paul, 4,161,372, Cl. 418-126.000.
Brune, Gerhard; and Lembke, Manfred, 4,161,306, Cl. 251-129.000.
Franz, Herbert; Wamsler, Reinhold; and Binder, Georg, 4,161,775, Cl. 363-145.000.
Heyl, Bodo, 4,161,748, Cl. 358-22.000.
Kamin, Gerhard R., 4,161,750, Cl. 358-105.000.
Latsch, Reinhard; and Bianchi, Valerio, 4,161,162, Cl. 123-32.0EA.
Ragaly, Istvan, 4,161,684, Cl. 322-90.000.

Robinson, Edward L., Jr.: *See—*
Ralston, Horace E.; Robinson, Edward L., Jr.; and Ralston, William K., deceased, 4,161,253, Cl. 414-25.000.

Rockwell International Corporation: *See—*
Ladacki, Michael, 4,161,104, Cl. 60-218.000.
Martinez, Miguel A., 4,161,663, Cl. 307-264.000.

Rohm and Haas Company: *See—*
Stambaugh, Robert L.; and Galluccio, Richard A., 4,161,452, Cl. 252-34.000.

Rohy, David A.: *See—*
Duffy, Thomas E.; and Rohy, David A., 4,161,211, Cl. 165-1.000.

Rolland, Guy: *See—*
Lenne, William; Bourdot, Jean F.; and Rolland, Guy, 4,161,060, Cl. 29-527.100.

Roller Bearing Company of America: *See—*
Weremijenko, Mykola, 4,161,055, Cl. 29-149.50B.

Rolls-Royce Limited: *See—*
Stuart, Alan R.; and Stratford, Brian S., 4,161,318, Cl. 277-53.000.
Wilkinson, Wilfred H., 4,161,231, Cl. 181-292.000.

Ropert, Claude P. Device for discharging materials lying upon a storage area. 4,161,255, Cl. 414-323.000.

Rosenblum, Robert J., to Texas Instruments Incorporated. Bubble memory controller with multipage data handling. 4,161,788, Cl. 364-900.000.

Rositch, Robert R.: *See—*
Hendrixon, John L.; and Rositch, Robert R., 4,161,321, Cl. 277-216.000.

Ross, Albert; Garrett, Richard H.; Gordon, Hayden S.; and Flavell, Evan R., to Ross, Albert. Portable folding orthopedic chair. 4,161,337, Cl. 297-230.000.

Ross, Donald E., to Dayco Corporation. Inventory comparison system. 4,161,330, Cl. 283-55.000.

Rossmy, Gerd: *See—*
Borner, Dieter; Koerner, Gotz; and Rossmy, Gerd, 4,161,487, Cl. 260-448.20R.

Rottmann, George: *See—*
Barouh, Victor; Rottmann, George; and DeSimone, Salvatore, 4,161,551, Cl. 428-539.000.

Roussin-Moynier, Yves: *See—*
Goldstein, Guy; Roussin-Moynier, Yves; and Albrecht, Gerd, 4,161,385, Cl. 425-462.000.

Royalty S.A.: *See—*
See, Jacques L. A., 4,161,558, Cl. 428-17.000.

Roznovsky, Frank B. Device for selectively controlling the number of operative cylinders in multi-cylinder internal combustion engines. 4,161,166, Cl. 123-198.00F.

Rubin, Isaac D.: *See—*
Cusano, Carmen M.; Rubin, Isaac D.; Jones, Ronald E.; and Vartanian, Paul F., 4,161,392, Cl. 44-62.000.

Rudolph, Louis R.; and Ewen, Woodrow W., II, to United States of America, Navy. Spin rate timing system. 4,161,780, Cl. 364-434.000.

Rudolph, Paul; and Marwig, Uwe D., to Metallgesellschaft Aktiengesellschaft. Shift conversion of raw gas from gasification of coal. 4,161,393, Cl. 48-197.00R.

Ruf, Peter: *See—*
Haug, Theobald; Keifer, Jurg; Ruf, Peter; and Schmitter, Andre, 4,161,580, Cl. 528-322.000.

Ruhrman, Gundel: *See—*
Ruhrmann, Wolfgang, 4,161,053, Cl. 24-205.14R.

Ruhrmann, Wolfgang, to Ruhrman, Gundel. Automatic-lock slider for slide fastener. 4,161,053, Cl. 24-205.14R.

Rust, Kurt: *See—*
Strametz, Helmut; and Rust, Kurt, 4,161,574, Cl. 526-159.000.

S & C Electric Company: *See—*
Meister, Otto, 4,161,711, Cl. 337-273.000.

Sacher, Eric; and Trebelhorn, Thomas E., to NCR Corporation. Complex logical fault detection apparatus and method. 4,161,276, Cl. 235-302.000.

Sack GmbH: *See—*
Wetter, Jakob, 4,161,115, Cl. 73-40.50R.

Sahara, Masayoshi; and Nakai, Masaaki, to Minolta Camera Kabushiki Kaisha. Photographic camera control circuitry. 4,161,355, Cl. 354-51.000.

Saint-Prix, Robert. Process for fabricating fluid-control members for internal-combustion engines and the like. 4,161,414, Cl. 148-11.50R.

Saito, Junichi: *See—*
Kishino, Shigeo; Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; and Tsuboi, Shinichi, 4,161,524, Cl. 424-215.000.

Saito, Takashi: *See—*
Agatsuma, Ko; Koyama, Kenichi; Todoriki, Itaru; Yamaguchi, Tetsuo; Kohno, Osamu; and Saito, Takashi, 4,161,062, Cl. 29-599.000.

Saito, Toshihisa: *See—*
Ishiguro, Yasuo; Wakazono, Kenji; and Saito, Toshihisa, 4,161,764, Cl. 361-187.000.

Sakamaki, Hiroshi, to Nippon Piston Ring Co., Ltd. Seal ring for rotary shaft. 4,161,317, Cl. 277-25.000.

Sakuma, Seiiti: *See—*
Enomoto, Takamichi; and Sakuma, Seiiti, 4,161,404, Cl. 96-1.50R.

Sakurai, Munekazu: *See—*
Itoh, Tsutomu; Sakurai, Munekazu; Yamamoto, Masahiro; and Okamoto, Yasunari, 4,161,765, Cl. 361-226.000.

Salanki, Tibor: *See—*
Heide, Wilfried; Muller, Friedrich; Otto, Klaus; and Salanki, Tibor, 4,161,213, Cl. 165-168.000.

Salters, Roelof H. W.: *See—*
Collet, Marnix G.; Salters, Roelof H. W.; and Koomen, Joannes J. M., 4,161,741, Cl. 357-41.000.

Samuelsson, Gustav B. R.: *See—*
Carlsson, Enar I.; Samuelsson, Gustav B. R.; and Lundgren, Bo T., 4,161,542, Cl. 424-330.000.

Sandrock, Gary D., to International Nickel Company, Inc., The. Nickel-calcium alloy for hydrogen storage. 4,161,401, Cl. 75-170.000.

Sandrock, Gary D., to International Nickel Company, Inc., The. Nickel-mischmetal-calcium alloys for hydrogen storage. 4,161,402, Cl. 75-170.000.

Sankyo Company Limited: *See—*
Terada, Atsusuke; Wachi, Kazuyuki; and Misaka, Eiichi, 4,161,538, Cl. 424-317.000.

Sano, Yoshihiro; Chiba, Tomio; Kudou, Hiroyuki; and Miki, Yoshiteru, to Hitachi, Ltd. Simultaneously sampled remote data reading and transmission system using optical fibers. 4,161,651, Cl. 250-199.000.

Sasaki, Shinichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method for attaching steering wheel. 4,161,058, Cl. 29-428.000.

Sasaki, Tetsuo; and Tsuchiya, Yoshimi, to Kao Soap Co., Ltd. Hair brush. 4,161,050, Cl. 15-159.00A.

Sato, Masato; and Nakamizo, Keiichi, to Kawasaki Jukogyo Kabushiki Kaisha. Power propelled boat with improved electrical connector. 4,161,156, Cl. 115-76.000.

Saunders, Robert L.; and Hone, George D., to Abex Corporation. Passenger loading bridge. 4,161,049, Cl. 14-71.500.

Savage, Robert H.; and Young, Cecil G., to Water Chemists, Inc. Apparatus and method for determining energy waste in refrigeration units. 4,161,106, Cl. 62-115.000.

Schafer, Robert H., to Uniform Tubes, Inc. Coaxial cable and method of making the same. 4,161,704, Cl. 333-33.000.

Scheingold, William S.: *See—*
Cherian, Gabriel B.; and Scheingold, William S., 4,161,346, Cl. 339-17.00M.

Scheithauer, Eric A., to Cook Electric Company. Gas tube arrester protector and method of assembling the protector. 4,161,762, Cl. 361-124.000.

Schering Corporation: *See—*
Neri, Rudolph O.; and Topliss, John G., 4,161,540, Cl. 424-324.000.
Weinstein, Marvin J.; Wagman, Gerald H.; and Marquez, Joseph A., 4,161,523, Cl. 424-181.000.

Schievelbein, Vernon H.: *See—*
Varnon, James E.; Schievelbein, Vernon H.; Kudchadker, Mohan V.; and Whittington, Lawrence E., 4,161,218, Cl. 166-269.000.

Schiffman, Louis. Corrosion inhibitive pigment. 4,161,409, Cl. 106-14.210.

Schleinitz, Henry M.; and Stephan, Paul G., to Du Pont de Nemours, E. I., and Company. Process for low attenuation methacrylate optical fiber. 4,161,500, Cl. 264-1.000.

Schlosberg, Seymour; and Lerman, Michael J., to DeDietrich (USA), Inc. Method and apparatus for repairing protectively lined reactor vessels. 4,161,689, Cl. 324-54.000.

Schmitter, Andre: *See—*
Haug, Theobald; Keifer, Jurg; Ruf, Peter; and Schmitter, Andre, 4,161,580, Cl. 528-322.000.

Schmohe, James S.; and Van Kessel, Ronald C., to Sundstrand Corporation. Exciter cooling arrangement for dynamoelectric machines. 4,161,668, Cl. 310-68.00D.

Schneider, Bernard A. Beacon add-on subsystem for collision avoidance system. 4,161,729, Cl. 343-6.50R.

Schneider, Herbert, to SUD-Chemie AG. Supplementary support for vehicles. 4,161,325, Cl. 280-81.00R.

Schoenfield, Palmer J.: *See—*
Katzman, Allison W.; Schoenfield, Palmer J.; and Meyer, Burton C., 4,161,081, Cl. 46-11.000.

Schonstedt Instrument Company: *See—*
Lund, John, 4,161,568, Cl. 429-99.000.

Schriber, Gene A.: *See—*
Groves, Stanley E.; Schriber, Gene A.; Spinks, Brian M.; Baker, Richard M.; Daly, Thomas C.; and Means, Rodney J., 4,161,787, Cl. 364-900.000.

Schulz, Nikolaus: *See—*
Priemer, Joachim; Nicklas, Georg; and Schulz, Nikolaus, 4,161,481, Cl. 260-369.000.

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Kleemann, Axel; Klenk, Herbert; and Schwarze, Werner, 4,161,491, Cl. 260-557.00R.

Schweizer, Ernst, to Ciba-Geigy Corporation. Process for the production of novel hydroxyalkyl dithiocarbamates. 4,161,534, Cl. 424-300.000.
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Beregi, Laszlo; Hugon, Pierre; Duhault, Jacques; and Boulanger, Michelle, 4,161,529, Cl. 424-274.000.
Sciortino, August M. Ice cream scoop. 4,161,381, Cl. 425-286.000.
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Kolleth, Gary G., 4,161,458, Cl. 252-305.000.
Scovill Manufacturing Company: *See*—
Jacob, Keith, 4,161,659, Cl. 307-39.000.
Scrocco, Joseph: *See*—
Cottingham, Hugh V.; and Scrocco, Joseph, 4,161,042, Cl. 3-17.00R.
Seaberg, Richard D., to Cascade Corporation. Fluid power system having multiple, separately controllable double-acting fluid motors and reduced number of fluid conduits. 4,161,256, Cl. 414-620.000.
Sealed Power Corporation: *See*—
Hendrixon, John L.; and Rositch, Robert R., 4,161,321, Cl. 277-216.000.
Sedlak, John A.: *See*—
Wasser, Richard B.; and Sedlak, John A., 4,161,423, Cl. 162-163.000.
See, Jacques L. A., to Royalty S.A. Flexible and permeable ground covering structure, particularly for sporting uses. 4,161,558, Cl. 428-17.000.
Selick, David A.: *See*—
Feinberg, Robert S.; and Selick, David A., 4,161,247, Cl. 206-315.00B.
Sell, Nancy J.; and Doyen, June E. Cement dust briquettes and process of production thereof. 4,161,411, Cl. 106-100.000.
Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., to Texaco Inc. Control system for a furfural refining unit receiving medium sweet charge oil. 4,161,427, Cl. 196-14.520.
Serracant Clermont, Jose M. Method for continuously fulling and working textile material in rope form. 4,161,054, Cl. 26-21.000.
Sewell, Vincent N. R., to R. B. Cybernetris (1970) Ltd. Method of enhancing oleophilic and hydrophobic properties of absorbent material. 4,161,460, Cl. 252-426.000.
Seymour, John P.; Mascioli, Rocco L.; Beitchman, Burton D.; and Zaluska, Philip J., to Air Products and Chemicals, Inc. Catalyst for epoxy powder coatings. 4,161,575, Cl. 528-90.000.
Shackle, Dale R.: *See*—
Lee, Yu-Sun; and Shackle, Dale R., 4,161,570, Cl. 521-53.000.
Shaffer, Marlin R., Jr. Hydrogen supply and utility systems and components thereof. 4,161,657, Cl. 290-1.00R.
Sharivker, Semen J.: *See*—
Merzhanov, Alexandr G.; Borovinskaya, Inna P.; Karjuk, Gennady G.; Dubovitsky, Fedor I.; Prokudina, Valentina K.; Ratnikov, Viktor I.; Bochko, Anatoly V.; Moshkovsky, Evgeny I.; Sharivker, Semen J.; and Krizhanovsky, Sergei S., 4,161,512, Cl. 423-440.000.
Shell Oil Company: *See*—
Dilgren, Richard E.; and Owens, Kenneth B., 4,161,217, Cl. 166-252.000.
Shelley, Peter S.: *See*—
Cotic, Dennis J.; Hoffman, David M.; Shelley, Peter S.; and Zech, Laurel J., 4,161,655, Cl. 250-385.000.
Shen, Tsung-Ying: *See*—
Wagner, Arthur F.; Grier, Nathaniel; and Shen, Tsung-Ying, 4,161,581, Cl. 525-411.000.
Sheppa, Milton A., to United States of America, Army. Self-regulating turbine. 4,161,371, Cl. 416-43.000.
Sherburne, Frederick B.: *See*—
Pardes, Herman I.; and Sherburne, Frederick B., 4,161,070, Cl. 35-25.000.
Sherman, Michael I., to Kamyr, Inc. Method and apparatus for continuous oxygen bleaching of cellulosic pulp. 4,161,421, Cl. 162-18.000.
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Ando, Tadahiko; Shibata, Takehiko; Ikawa, Shukuko; and Kim, Cholung, 4,161,424, Cl. 435-199.000.
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Fujikata, Kenji; Yokozawa, Norio; and Shibayama, Akinori, 4,161,700, Cl. 328-147.000.
Shimada, Wataru; and Hiramoto, Seigo, to Mitsubishi Denki Kabushiki Kaisha. Arc welding apparatus and method. 4,161,645, Cl. 219-137.00R.
Shimoda, Yoshio: *See*—
Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, 4,161,459, Cl. 252-352.000.
Shiokawa, Kozo: *See*—
Kishino, Shigeo; Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; and Tsuboi, Shinichi, 4,161,524, Cl. 424-215.000.
Shippy, Ronald L.: *See*—
Powell, Joe A.; Messerly, James W.; and Shippy, Ronald L., 4,161,202, Cl. 152-347.000.
Shiraishi, Satoshi; Fujiwara, Kunio; and Kurosaki, Shiro, to Sumitomo Electric Industries, Ltd. Process for producing optical transmission fiber. 4,161,505, Cl. 264-171.000.
Shiraki, Yoshiro; Haraoka, Hiroshi; and Arai, Hiromichi, to Central Glass Company, Limited. Process of refining sodium hexafluorosilicate. 4,161,511, Cl. 423-341.000.
Sibalis, Dan. Pneumatic acoustic transducer with ferromagnetic fluid valve. 4,161,632, Cl. 179-113.000.
Siemens Aktiengesellschaft: *See*—
Behn, Reinhard, 4,161,774, Cl. 363-59.000.
Buchner, Klaus, 4,161,122, Cl. 73-626.000.
Habrich, Reiner, 4,161,262, Cl. 222-1.000.
Haendle, Joerg; Horbaschek, Heinz; and Sklebitz, Hartmut, 4,161,755, Cl. 358-219.000.
Heide, Wilfried; Muller, Friedrich; Otto, Klaus; and Salanki, Tibor, 4,161,213, Cl. 165-168.000.
Heitmann, Juergen, 4,161,623, Cl. 178-79.000.
Kern, Hans, 4,161,670, Cl. 310-317.000.
Muhlberg, Erhard, 4,161,164, Cl. 123-122.00G.
Smutny, Kurt, 4,161,724, Cl. 340-347.0NT.
Thilo, Peer; and Moser, Otto W., 4,161,727, Cl. 340-518.000.
Weber, Hans-Werner; and Vollhardt, Hermann, 4,161,694, Cl. 325-1.000.
Sigler, Robert D.: *See*—
Thomas, Carlton E.; Sigler, Robert D.; and Hoeger, John G., 4,161,351, Cl. 350-294.000.
Sigwalt, Pierre; Guyot, Patrick; and Fontanille, Michel, to Societe Chimique des Charbonnages CDF Chimie; and Agence Nationale de Valorisation de la Recherche. Bi-and trifunctional organolithium initiators. 4,161,494, Cl. 260-665.00R.
Sih, John C.: *See*—
Johnson, Roy A.; and Sih, John C., 4,161,585, Cl. 542-426.000.
Johnson, Roy A.; and Sih, John C., 4,161,586, Cl. 542-426.000.
Johnson, Roy A.; and Sih, John C., 4,161,587, Cl. 542-426.000.
Siliconix Corporation: *See*—
Yim, Ernest W.; and VanLoon, Paul G. G., 4,161,417, Cl. 148-175.000.
Simon-Heesen B.V.: *See*—
Van Deuren, Franciscus, 4,161,139, Cl. 99-467.000.
Singer Company, The: *See*—
Brown, Jack, 4,161,150, Cl. 112-158.00E.
Herron, William L., 4,161,152, Cl. 112-254.000.
Sinn, Gustav; Matner, Martin; and Bross, Hermann J., to Bayer Aktiengesellschaft. Base material for artificial leather. 4,161,456, Cl. 252-182.000.
Sitarz, Charles L. Downspout receiver and water dispensing device. 4,161,186, Cl. 137-357.000.
Sklebitz, Hartmut: *See*—
Haendle, Joerg; Horbaschek, Heinz; and Sklebitz, Hartmut, 4,161,755, Cl. 358-219.000.
Skretting, Hans, to Elkem-Spigerverket A/S. Method of producing mechanically strong metal oxide pellets. 4,161,501, Cl. 264-66.000.
Skyllermark, Stefan M. B.: *See*—
Carlin, Carl-Gustaf; and Skyllermark, Stefan M. B., 4,161,220, Cl. 173-1.000.
Carlin, Carl-Gustaf; and Skyllermark, Stefan M. B., 4,161,221, Cl. 173-1.000.
Slob, Arie, to U.S. Philips Corporation. Semiconductor device having non-metallic connection zones. 4,161,745, Cl. 357-59.000.
Smetanjuk, Vladimir I.: *See*—
Bocharov, Jury N.; Kabanov, Viktor A.; Martynova, Marina A.; Popov, Valery G.; Smetanjuk, Vladimir I.; and Fedorov, Viktor V., 4,161,462, Cl. 252-429.00B.
Smisson, Leonard F. Aircraft performance data qualifier. 4,161,299, Cl. 244-1.00R.
Smith International, Inc.: *See*—
Oelke, Erwin S., 4,161,223, Cl. 175-228.000.
Smith, James A.; and McLaughlin, James H., to Airwick Industries, Inc. Powdered carpet composition. 4,161,449, Cl. 252-8.600.
Smith, Kenneth W., to Xerox Corporation. Liquid development apparatus. 4,161,360, Cl. 355-10.000.
Smith, Raymond: *See*—
Jasas, Gytis B.; Trauth, Richard L.; and Smith, Raymond, 4,161,102, Cl. 60-39.14M.
Smutny, Kurt, to Siemens Aktiengesellschaft. Method and circuit arrangement for converting an analog quantity into a digital quantity using a pair of integrators. 4,161,724, Cl. 340-347.0NT.
Snyder, Wesley L. Aiming system for weapons. 4,161,076, Cl. 42-1.00A.
Societe Chimique des Charbonnages CDF Chimie: *See*—
Sigwalt, Pierre; Guyot, Patrick; and Fontanille, Michel, 4,161,494, Cl. 260-665.00R.
Societe d'Etudes de Machines Thermiques S.E.M.T.: *See*—
Bastenhof, Dirk, 4,161,161, Cl. 123-32.0JV.
Societe d'Etudes Scientifiques et Industrielles de l'Ile de France: *See*—
Bulteau, Gerard; Acher, Jacques; and Monier, Jean C., 4,161,532, Cl. 424-274.000.
Societe Nationale Elf Aquitaine (Production): *See*—
Barrault, Joel; Guisnet, Michel; Lucien, Jacques; and Maurel, Raymond, 4,161,493, Cl. 260-609.00R.
Sogo, Marilyn R., to Burroughs Corporation. Method of forming integrated circuit metal interconnect structure employing molybdenum on aluminum. 4,161,430, Cl. 204-15.000.
Sojka, Nickolas J., to University of Virginia Alumni Patents Foundation. Apparatus for handling wastes from small animal cages. 4,161,198, Cl. 141-92.000.
Solar Energy Systems, Inc.: *See*—
Brussels, Nathan E.; and Piasecki, Edwin S., 4,161,169, Cl. 126-271.000.
Soma, Ikuo; and Takada, Yusaku, to Canon Kabushiki Kaisha. Wet type electrophotographic apparatus. 4,161,361, Cl. 355-10.000.
Sonoco Products Company: *See*—
Wagner, Robert J., 4,161,263, Cl. 222-100.000.

Soriano, Peter A.: *See—*
Erickson, John W.; and Soriano, Peter A., 4,161,448, Cl. 210-258.000.

Sotiropoulos, Peter G.: *See—*
Morrow, Jim B.; and Sotiropoulos, Peter G., 4,161,066, Cl. 32-14.00A.

Southern Explosives Corporation: *See—*
Edwards, Donald W.; and Wells, Luther R., Jr., 4,161,142, Cl. 102-23.000.

Spaziante, Placido M.: *See—*
De Nora, Oronzio; Nidola, Antonio; and Spaziante, Placido M., 4,161,433, Cl. 204-98.000.

Spence-Bate, Harry A. H. Microform camera. 4,161,709, Cl. 355-38.000.

Spencer, David H.; and Becker, Edward A., to Burroughs Corporation. Dynamic priority system for controlling the access of stations to a shared device. 4,161,779, Cl. 364-200.000.

Spencer, David R.; and Baxter, Larry K., to Litton Systems, Inc. Facsimile system. 4,161,757, Cl. 358-261.000.

Spencer, Gerald: *See—*
Strawson, Kenneth H.; and Spencer, Gerald, 4,161,378, Cl. 425-3.000.

Sperry Rand Corporation: *See—*
Torok, Ernest J.; Paul, Maynard C.; and Lo, David S., 4,161,789, Cl. 365-87.000.
Vansteelant, Marc G., 4,161,097, Cl. 56-343.000.

Spinks, Brian M.: *See—*
Groves, Stanley E.; Schriber, Gene A.; Spinks, Brian M.; Baker, Richard M.; Daly, Thomas C.; and Means, Rodney J., 4,161,787, Cl. 364-900.000.

Spivack, John D.; and Dexter, Martin, to Ciba-Geigy Corporation. 2,4,6-Trialkyl-3-hydroxyphenylalkane phosphonate and phosphinate stabilizers. 4,161,473, Cl. 260-45.85S.

Srinivasan, Seshadri: *See—*
Greene, Neil E.; Srinivasan, Seshadri; and Stenger, Leonard A., 4,161,396, Cl. 65-1.000.

Staffin, Herbert K.; and Staffin, Robert, to Procedyne, Inc. Fluidized bed calcining system. 4,161,389, Cl. 432-58.000.

Staffin, Robert: *See—*
Staffin, Herbert K.; and Staffin, Robert, 4,161,389, Cl. 432-58.000.

Stakhov, Alexei P. Analog-Fibonacci p-code converter. 4,161,725, Cl. 340-347.0AD.

Stallcup, Odie T., to Dow Chemical Company, The. Use of malic acid as a ruminant feed additive. 4,161,539, Cl. 424-317.000.

Stambaugh, Lanier: *See—*
Van den Sype, Jaak S.; and Stambaugh, Lanier, 4,161,415, Cl. 148-12.00B.

Stambaugh, Robert L.; and Galluccio, Richard A., to Rohm and Haas Company. Polyolefinic copolymer additives for lubricants and fuels. 4,161,452, Cl. 252-34.000.

Standard Oil Company (Indiana): *See—*
Akin, Cavit; and Darrington, Franklin D., 4,161,546, Cl. 426-104.000.

Standard Oil Company (Ohio): *See—*
Paspek, Stephen C., Jr.; and Every, William A., 4,161,613, Cl. 562-600.000.

Stange, Hugo: *See—*
Price, John A.; and Stange, Hugo, 4,161,577, Cl. 528-173.000.

Stanley Works, The: *See—*
Hildebrandt, William J.; and West, Robert F., 4,161,781, Cl. 364-562.000.

Stanton, Leo F., to Bush Universal, Inc. Method and apparatus for stiffening shoe insoles. 4,161,048, Cl. 12-146.00S.

Starokadomsky, Vadim S.: *See—*
Bakhalov, Vladimir I.; Volvenkov, Gennady V.; Polukhin, Valentin P.; Starokadomsky, Vadim S.; and Ter-Bogdasarov, Arkady V., 4,161,148, Cl. 112-110.000.

State of Connecticut: *See—*
Kasinskas, Michael M., 4,161,280, Cl. 239-1.000.

Staudacher, Werner: *See—*
Schwaerzler, Hans; and Staudacher, Werner, 4,161,300, Cl. 244-45.00A.

Stauffer Chemical Company: *See—*
Melachouris, Nicholas, 4,161,552, Cl. 426-646.000.

Stavisky, John: *See—*
Herman, John L.; and Stavisky, John, 4,161,357, Cl. 355-3.0DR.

Stein, Manfred, to VDO Adolf Schindling AG. Protection circuit for a voltage regulator. 4,161,759, Cl. 361-18.000.

Steiner, Edward L., to Xerox Corporation. Improper copy run program entry check for electrostatic type reproduction or copying machines. 4,161,277, Cl. 235-304.000.

Steinkraus, Celeste M.: *See—*
Eubanks, Ann S.; and Steinkraus, Celeste M., 4,161,075, Cl. 40-309.000.

Stenger, Leonard A.: *See—*
Greene, Neil E.; Srinivasan, Seshadri; and Stenger, Leonard A., 4,161,396, Cl. 65-1.000.

Stenkvist, Sven-Einar, to ASEA Aktiebolag. DC arc furnace operation indicating system. 4,161,618, Cl. 13-12.000.

Stephan, Paul G.: *See—*
Schleinitz, Henry M.; and Stephan, Paul G., 4,161,500, Cl. 264-1.000.

Stephenson, James M.: *See—*
Foulkes, Stanley C.; Moore, Robert; Ratcliffe, James; and Stephenson, James M., 4,161,503, Cl. 264-136.000.

Sterling Drug Inc.: *See—*
Albertson, Noel F., 4,161,598, Cl. 546-97.000.
Gorman, William G., 4,161,526, Cl. 424-245.000.

Stetson, Earl W., to General Electric Company. Compact voltage surge arrester device. 4,161,763, Cl. 361-128.000.

Stevens, Bernard: *See—*
Buday, John M.; Holmes, Lawrence B.; Milenkovic, Veljko; and Stevens, Bernard, 4,161,092, Cl. 53-244.000.

Stevenson, James S., to Terminator Products, Inc. Apparatus for measuring and dispensing chemical. 4,161,197, Cl. 141-18.000.

Stixrud, Thomas E., to United States of America, Navy. Very low frequency sonobuoy (VLF sonobuoy). 4,161,716, Cl. 340-2.000.

Stocking, Arnold G. Expansion packer. 4,161,319, Cl. 277-116.600.

Stolper, Leonid M.: *See—*
Korsakov-Bogatkov, Sergei M.; Krakovsky, Boris D.; Nikitkin, Vasily D.; Onosovsky, Evgeny V.; Pronko, Vladimir G.; Stolper, Leonid M.; and Chernyshev, Boris A., 4,161,107, Cl. 62-117.000.

Storz, Erwin, to Keinzle Uhrenfabriken GmbH. Day and date indicator for clocks. 4,161,099, Cl. 58-4.00R.

Stossberg, Udo; Frania, Josef; Meyer, Hans F.; and Kneuttinger, Alfrons, to WABCO Westinghouse GmbH. Fluid pressure circuit for periodic operation of fluid pressure operable drive means. 4,161,134, Cl. 91-219.000.

Strachan, Robert G.: *See—*
Veber, Daniel F.; Holly, Frederick W.; Strachan, Robert G.; Paleveda, William J.; Nutt, Ruth F.; and Hirschmann, Ralph F., 4,161,521, Cl. 424-177.000.

Strametz, Helmut; and Rust, Kurt, to Hoechst Aktiengesellschaft. Propylene-terpolymers. 4,161,574, Cl. 526-159.000.

Stratford, Brian S.: *See—*
Stuart, Alan R.; and Stratford, Brian S., 4,161,318, Cl. 277-53.000.

Stratoflat International Company: *See—*
Lagostina, Adriano, 4,161,260, Cl. 220-316.000.

Strawson, Kenneth H.; and Ramsey, Joseph, to National Research Development Corporation. Moulding apparatus. 4,161,377, Cl. 425-3.000.

Strawson, Kenneth H.; and Spencer, Gerald, to National Research Development Corporation. Production of moulded components in compactable materials. 4,161,378, Cl. 425-3.000.

Stroud, Lebern W.; and Lemons, Jerry W. Alternator for a regenerative feed-back system. 4,161,683, Cl. 322-87.000.

Stuart, Alan R.; and Stratford, Brian S., to Rolls-Royce Limited. Sealing system for rotors. 4,161,318, Cl. 277-53.000.

Stucke, Charles G., to Chemprene, Inc. Resilient packing. 4,161,320, Cl. 277-205.000.

Stuhlman, Frank A. Retaining structure for gutter downspouts. 4,161,302, Cl. 248-49.000.

Stump, Paul E., to Babcock & Wilcox Company, The. Tube drawing technique. 4,161,112, Cl. 72-283.000.

Sturgeon, Lloyd F., to Proctor & Schwartz, Inc. Panels for industrial dryers and other heated enclosures having stainless steel end structural sheet elements. 4,161,567, Cl. 428-594.000.

Sturm, Karl; and Muschaweck, Roman, to Hoechst Aktiengesellschaft. 5-Sulfamoyl-orthanilic acids and process for their preparation. 4,161,533, Cl. 424-285.000.

SUD-Chemie AG: *See—*
Schneider, Herbert, 4,161,325, Cl. 280-81.00R.

Sudyk, John R., to Johnson Rubber Company, The. Apparatus for producing reinforced hose. 4,161,379, Cl. 425-112.000.

Sukup, Richard A. Protective appendage for a steering column. 4,161,334, Cl. 296-1.00R.

Sumitomo Chemical Company, Limited: *See—*
Yasui, Seimei; and Oshima, Takao, 4,161,571, Cl. 526-90.000.

Sumitomo Electric Industries, Ltd.: *See—*
Nakayama, Tadaharu, 4,161,688, Cl. 324-52.000.
Shiraishi, Satoshi; Fujiwara, Kunio; and Kurosaki, Shiro, 4,161,505, Cl. 264-171.000.

Sundstrand Corporation: *See—*
Schmohe, James S.; and Van Kessel, Ronald C., 4,161,668, Cl. 310-68.00D.

Suzuki, Fred K.; and Davison, Thomas W., to Liquid Crystal Products, Inc. Polyvinyl butyral-liquid crystal film-forming composition and film. 4,161,557, Cl. 428-1.000.

Suzuki, Shigeto, to Chevron Research Company. Process for preparing thiodiglycolic acid. 4,161,612, Cl. 562-594.000.

Suzuki, Yasuo; Abe, Masaru; and Tezuka, Toshiro, to Bridgestone Tire Company Limited. Pneumatic radial tire. 4,161,203, Cl. 152-361.00R.

Svekric, Fred E.: *See—*
Markarian, Kegham M.; Matty, Richard D.; and Svekric, Fred E., 4,161,619, Cl. 13-18.00C.

Svensson, Lars G.; Karlstedt, Gustav; Tisell, Claes; and Thorstensson, Yngve, to Forenade Fabriksverken. Vehicle crash detector. 4,161,228, Cl. 180-282.000.

Syva Company: *See—*
Ullman, Edwin F., 4,161,515, Cl. 424-8.000.

Szarewicz, Thomas D.; and Drinkard, John H., Jr., to Burroughs Corporation. Carousel-type component dispenser with photoelectric control means. 4,161,654, Cl. 250-221.000.

Szpakowski, Bronislaw T., to Northern Telecom Limited. Push-pull inverter including starter circuit. 4,161,773, Cl. 363-49.000.

Tagawa, Kazuaki: *See—*
Yanagawa, Nobuyuki; Watanabe, Tsutomu; and Tagawa, Kazuaki, 4,161,644, Cl. 219-216.000.

Tague, Steven A.: *See—*
Cushing, David E.; and Tague, Steven A., 4,161,784, Cl. 364-748.000.

Takada, Yusaku: *See—*
Soma, Ikuo; and Takada, Yusaku, 4,161,361, Cl. 355-10.000.

Takagi, Toshinori: *See*—
Morimoto, Kiyoshi; Utamura, Yukihiko; and Takagi, Toshinori, 4,161,418, Cl. 148-175.000.
Takahashi, Koichi; Narita, Kinichiro; Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Koike, Junro; Toyonaga, Ryuya; and Kojima, Takehiro, to Dai Nippon Toryo Co., Ltd.; and Nippon Hoso Kyokai. Process for preparing a divalent europium activated alkaline earth metal aluminate phosphor. 4,161,457, Cl. 252-301.40R.
Takeda Chemical Industries, Ltd.: *See*—
Ishizuka, Kenzo; Fujisawa, Hiroshi; and Noda, Etsunosuke, 4,161,527, Cl. 424-246.000.
Takeda, Yutaka; Nakamura, Satoshi; Chinone, Naoki; Nakashima, Hisao; and Kurata, Kazuhiro, to Hitachi, Ltd. Semiconductor laser. 4,161,701, Cl. 331-94.50H.
Takeuchi, Takashi: *See*—
Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, 4,161,459, Cl. 252-352.000.
Takikawa, Yujiro: *See*—
Nawa, Hideo; and Takikawa, Yujiro, 4,161,153, Cl. 112-279.000.
Talwar, Gursaran P., to All India Institute of Medical Sciences. Process for preparing an antipregnancy vaccine. 4,161,519, Cl. 424-88.000.
Tamura, Junichi: *See*—
Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, 4,161,459, Cl. 252-352.000.
Tanaka, Akio, to Zenith Radio Corporation. Second derivative memory-saving all channel digital tuning system. 4,161,699, Cl. 325-464.000.
Tanaka, Taruo, to Yoshida Kogyo Kabushiki Kaisha. Packaged slide fastener. 4,161,246, Cl. 206-45.310.
Tang, Horng S.: *See*—
Hao, Paul L. C.; Tang, Horng S.; and Hsu, Wei W., 4,161,465, Cl. 260-2.300.
Tardy, Andre, to Compagnie Generale d'Electricite. Connector for an optical fibre link. 4,161,347, Cl. 350-96.210.
Tarzwell, John W., to Cerprobe Corporation. Probe device for integrated circuit wafers. 4,161,692, Cl. 324-158.00P.
Tatch, Martin S., to United States of America, Navy. Signal decoding system. 4,161,722, Cl. 340-171.00R.
Taylor, Charles F. Anchor member for unitizing a plurality of containers. 4,161,254, Cl. 206-504.000.
Taylor, Lynn J.: *See*—
Lenard, William M.; and Taylor, Lynn J., 4,161,556, Cl. 427-385.00A.
Taylor, Paul D.; Vanderspurt, Thomas H.; and Conciatori, Anthony B., to Celanese Corporation. Acrolein conversion to butanediol. 4,161,616, Cl. 568-862.000.
Teledyne Industries, Inc.: *See*—
Jasas, Gytis B.; Trauth, Richard L.; and Smith, Raymond, 4,161,102, Cl. 60-39.14M.
Telefonaktiebolaget L M Ericsson: *See*—
Baggstrom, Stig G., 4,161,245, Cl. 198-399.000.
Tenneco., Inc.: *See*—
Nowak, Hubert H., 4,161,509, Cl. 422-179.000.
Terada, Atsusuke; Wachi, Kazuyuki; and Misaka, Eiichi, to Sankyo Company Limited. Substituted phenylacetic acid derivatives and process for the preparation thereof. 4,161,538, Cl. 424-317.000.
Ter-Bogdasarov, Arkady V.: *See*—
Bakhalov, Vladimir I.; Volvenkov, Gennady V.; Polukhin, Valentin P.; Starokadomsky, Vadim S.; and Ter-Bogdasarov, Arkady V., 4,161,148, Cl. 112-110.000.
Terminator Products, Inc.: *See*—
Stevenson, James S., 4,161,197, Cl. 141-18.000.
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Markessini, Andrew C., 4,161,467, Cl. 260-29.40R.
Texaco Inc.: *See*—
Cusano, Carmen M.; Rubin, Isaac D.; Jones, Ronald E.; and Vartanian, Paul F., 4,161,392, Cl. 44-62.000.
Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., 4,161,427, Cl. 196-14.520.
Varnon, James E.; Schievelbein, Vernon H.; Kudchadker, Mohan V.; and Whittington, Lawrence E., 4,161,218, Cl. 166-269.000.
Texas Instruments Incorporated: *See*—
Burson, David C.; and Larson, Harold D., 4,161,726, Cl. 340-365.00R.
Cochran, Michael J.; and Caudel, Edward R., 4,161,697, Cl. 325-330.000.
Rosenblum, Robert J., 4,161,788, Cl. 364-900.000.
Tezuka, Toshiro: *See*—
Suzuki, Yasuo; Abe, Masaru; and Tezuka, Toshiro, 4,161,203, Cl. 152-361.00R.
Th. Goldschmidt AG: *See*—
Borner, Dieter; Koerner, Gotz; and Rossmy, Gerd, 4,161,487, Cl. 260-448.20R.
Thebault, Jean-Robert: *See*—
Vitat, Jean-Claude; Remond, Jean-Pierre; and Thebault, Jean-Robert, 4,161,450, Cl. 252-194.000.
Theiling, Louis F., Jr.: *See*—
Cowherd, Frank G., III; and Theiling, Louis F., Jr., 4,161,596, Cl. 544-388.000.
Thiel, Peter H., to Westinghouse Electric Corp. Current limiting fuse for capacitor. 4,161,712, Cl. 337-159.000.
Thilo, Peer; and Moser, Otto W., to Siemens Aktiengesellschaft. Process for generating and transmitting different analog measured values to a central control from a plurality of fire alarm circuits which are arranged in the form of a chain in an alarm loop. 4,161,727, Cl. 340-518.000.
Thomas, Carlton E.; Sigler, Robert D.; and Hoeger, John G., to United States of America, Energy. All-reflective optical target illumination system with high numerical aperture. 4,161,351, Cl. 350-294.000.
Thomas, Klaus; Ost, Walter; and Curtze, Jurgen, to Celamerck GmbH & Co. KG. 1,3-Diphenyl-2-trichloromethyl-imidazolidines. 4,161,528, Cl. 424-273.00R.
Thomas, Otto, to Jos. Schneider & Co. Optische Werke. Control system for varifocal objective. 4,161,756, Cl. 358-225.000.
Thorstensson, Yngve: *See*—
Svensson, Lars G.; Karlstedt, Gustav; Tisell, Claes; and Thorstensson, Yngve, 4,161,228, Cl. 180-282.000.
Tiedt, Herman J.: *See*—
Klos, Ted; and Tiedt, Herman J., 4,161,649, Cl. 235-92.0MP.
Tiemann, Jerome J.: *See*—
Wrench, Edwin H., Jr.; and Tiemann, Jerome J., 4,161,783, Cl. 364-606.000.
Tiffin, Patrick L. Remotely operable portable boring tool. 4,161,127, Cl. 82-1.400.
Tiger, Howard L. Suntrap solar radiation collector. 4,161,180, Cl. 128-372.000.
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Svensson, Lars G.; Karlstedt, Gustav; Tisell, Claes; and Thorstensson, Yngve, 4,161,228, Cl. 180-282.000.
Todoriki, Itaru: *See*—
Agatsuma, Ko; Koyama, Kenichi; Todoriki, Itaru; Yamaguchi, Tetsuo; Kohno, Osamu; and Saito, Takashi, 4,161,062, Cl. 29-599.000.
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Tokico Ltd.: *See*—
Karasudani, Yasuo, 4,161,239, Cl. 188-106.00P.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Uchida, Norio; and Komiyama, Nakaba, 4,161,237, Cl. 188-1.00B.
Yonezawa, Toshio; Ajima, Takashi; and Uchida, Masato, 4,161,743, Cl. 357-54.000.
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Blidung, Otto; Tolasch, Gerhard; and Bardenhagen, Dietrich, 4,161,094, Cl. 53-493.000.
Tominaga, Tetsuhiko: *See*—
Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, 4,161,459, Cl. 252-352.000.
Tommaney, Joseph W.; and Burton, Claudia J., to Allegheny Ludlum Industries, Inc. Method for electroslag remelting of a copper-nickel alloy. 4,161,398, Cl. 75-10.00C.
Tommaney, Joseph W.; and Burton, Claudia J., to Allegheny Ludlum Industries, Inc. Method for electroslag remelting of a manganese-copper-nickel alloy. 4,161,399, Cl. 75-10.00C.
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Kaga, Takashi, 4,161,314, Cl. 273-121.00R.
Topliss, John G.: *See*—
Neri, Rudolph O.; and Topliss, John G., 4,161,540, Cl. 424-324.000.
Torok, Ernest J.; Paul, Maynard C.; and Lo, David S., to Sperry Rand Corporation. Cross-tail sensor for cross-tie memory. 4,161,789, Cl. 365-87.000.
Toyo Seikan Kaisha, Ltd.: *See*—
Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, 4,161,459, Cl. 252-352.000.
Toyonaga, Ryuya: *See*—
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Kawaguchi, Hiroshi; and Nomura, Yoshihisa, 4,161,339, Cl. 303-24.00F.
Sasaki, Shinichi, 4,161,058, Cl. 29-428.000.
Transfertex Thermodruck-system GmbH: *See*—
Metzger, Gerhard, 4,161,563, Cl. 428-233.000.
Traut, Earl W. Linear rolling contact valves. 4,161,184, Cl. 137-98.000.
Trauth, Richard L.: *See*—
Jasas, Gytis B.; Trauth, Richard L.; and Smith, Raymond, 4,161,102, Cl. 60-39.14M.
Trebelhorn, Thomas E.: *See*—
Sacher, Eric; and Trebelhorn, Thomas E., 4,161,276, Cl. 235-302.000.
Treiber, Robert, to International Telephone & Telegraph Corp. Subscriber line/trunk circuit. 4,161,633, Cl. 179-170.200.
Trutzschler GmbH & Co. KG: *See*—
Erben, Ludwig, 4,161,052, Cl. 19-240.000.
Tsonopoulos, Constantine: *See*—
Baiel, James J.; and Tsonopoulos, Constantine, 4,161,429, Cl. 203-18.000.
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Tsuchiya, Yoshimi: *See*—
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Tumac Industries, Inc.: *See*—
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Turner, Sam R., to Xerox Corporation. Electron acceptor monomers. 4,161,490, Cl. 260-465.00D.

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Yarwood, John C.; Yun, Ik Y.; Tyler, Derek E.; and Kindlmann, Peter J., 4,161,206, Cl. 164-49.000.
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Uchida, Norio; and Komiyama, Nakaba, to Tokyo Shibaura Electric Co., Ltd. Vibration absorber for rotating body. 4,161,237, Cl. 188-1.00B.
Uebel, Alexander: *See—*
Ranger, Anton; and Uebel, Alexander, 4,161,191, Cl. 137-625.460.
Ullman, Edwin F., to Syva Company. Double receptor fluorescent immunoassay. 4,161,515, Cl. 424-8.000.
Ulrich, Helmut: *See—*
Reinecke, Erich; Ulrich, Helmut; Haas, Arnold; and Kolmitz, Willi, 4,161,341, Cl. 303-52.000.
Ulrich, Reinhard R., to United States of America, Army. Preassembled fiber optic security seal. 4,161,348, Cl. 350-96.200.
Umeda, Saburo: *See—*
Matsunaga, Takehiko; Umeda, Saburo; and Kamei, Tsuneaki, 4,161,431, Cl. 204-15.000.
Uni Corporation, The: *See—*
Brown, Henry C., 4,161,338, Cl. 298-22.00J.
Uniform Tubes, Inc.: *See—*
Schafer, Robert H., 4,161,704, Cl. 333-33.000.
Union Carbide Corporation: *See—*
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Detz, Clifford M., 4,161,495, Cl. 585-4.000.
Fuhrhop, Ronald E., 4,161,413, Cl. 148-9.500.
Van den Sype, Jaak S.; and Stambaugh, Lanier, 4,161,415, Cl. 148-12.00B.
Union Oil Company of California: *See—*
Klass, Donald L., 4,161,610, Cl. 560-243.000.
Pye, David S., 4,161,222, Cl. 175-66.000.
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Francois, Edgar, 4,161,059, Cl. 29-432.000.
United States Bedding Company, The: *See—*
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United States Borax & Chemical Corporation: *See—*
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United States Gypsum Company: *See—*
Page, John; and Leding, Francis R., 4,161,390, Cl. 432-102.000.
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Air Force: *See—*
Quinlan, Kenneth P.; and Hutta, Joseph J., 4,161,434, Cl. 204-146.000.
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Kasinskas, Michael M., 4,161,280, Cl. 239-1.000.
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Pardes, Herman I.; and Sherburne, Frederick B., 4,161,070, Cl. 35-25.000.
Sheppa, Milton A., 4,161,371, Cl. 416-43.000.
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Lytle, R. Jeffrey; Lager, Darrel L.; Laine, Edwin F.; and Davis, Donald T., 4,161,687, Cl. 324-6.000.
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Jennings, Donald E. Shock isolator for operating a diode laser on a closed-cycle refrigerator. 4,161,747, Cl. 357-82.000.
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Barr, Thomas A., 4,161,731, Cl. 343-14.000.
Navy: *See—*
Black, William L.; Gould, Robert A.; and Wood, Stanley E., 4,161,133, Cl. 89-7.000.
Kessler, Bernard V.; Hoff, Gerald F.; and Burke, James R., 4,161,702, Cl. 331-94.50H.
Kraeutle, Karl J., 4,161,114, Cl. 73-15.600.
Messick, Louis J., 4,161,739, Cl. 357-23.000.
Rudolph, Louis R.; and Ewen, Woodrow W., II, 4,161,780, Cl. 364-434.000.
Stixrud, Thomas E., 4,161,716, Cl. 340-2.000.
Tatch, Martin S., 4,161,722, Cl. 340-171.00R.
Vermeers, Stanley L., 4,161,691, Cl. 324-120.000.
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U.S. Philips Corporation: *See—*
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Collet, Marnix G.; Salters, Roelof H. W.; and Koomen, Joannes J. M., 4,161,741, Cl. 357-41.000.
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Eckhardt, Friedhelm; Raffenberg, Wolfgang; and Klein, Axel, 4,161,312, Cl. 271-3.000.
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United Technologies Corporation: *See—*
Degnan, William G., 4,161,125, Cl. 74-469.000.
Horgan, John J.; and Morrison, Francis H., 4,161,103, Cl. 60-39.350.
Matheny, Paul; and Akin, Joe T., 4,161,285, Cl. 239-132.300.
Patrick, John P., 4,161,658, Cl. 290-44.000.
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University of Michigan, The Regents of the: *See—*
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Upjohn Company, The: *See—*
Bundy, Gordon L., 4,161,584, Cl. 542-421.000.
Johnson, Roy A.; and Sih, John C., 4,161,585, Cl. 542-426.000.
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Van den Sype, Jaak S.; and Stambaugh, Lanier, to Union Carbide Corporation. Method for providing strong wire. 4,161,415, Cl. 148-12.00B.
Vanderspurt, Thomas H.: *See—*
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Van Deuren, Franciscus, to Simon-Heesen B.V. Conditioning apparatus. 4,161,139, Cl. 99-467.000.
Van Etten, James P.: *See—*
Dishal, Milton; and Van Etten, James P., 4,161,696, Cl. 325-163.000.
Van Kessel, Ronald C.: *See—*
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VanLoon, Paul G. G.: *See—*
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Vansteelant, Marc G., to Sperry Rand Corporation. Knotter with improved billhook and actuation mechanism. 4,161,097, Cl. 56-343.000.
Vapor Corporation: *See—*
Bell, Robert R.; and Alexander, William H., 4,161,308, Cl. 251-228.000.
Varian Associates, Inc.: *See—*
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Varnon, James E.; Schievelbein, Vernon H.; Kudchadker, Mohan V.; and Whittington, Lawrence E., to Texaco Inc. High conformance enhanced oil recovery process. 4,161,218, Cl. 166-269.000.
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Blaske, Theodore A.; and Yu, Ho Y., 4,161,744, Cl. 357-59.000.
Vartanian, Paul F.: *See—*
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Vasishth, Ramesh C., to Cor Tech Research Ltd. Control of procedures for formation of water-immiscible thermosetting phenol-formaldehyde resins. 4,161,576, Cl. 528-139.000.
VDO Adolf Schindling AG: *See—*
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Veber, Daniel F.; Holly, Frederick W.; Strachan, Robert G.; Paleveda, William J.; Nutt, Ruth F.; and Hirschmann, Ralph F., to Merck & Co., Inc. Somatostatin analogs. 4,161,521, Cl. 424-177.000.
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Kim, Dong-Whee, 4,161,611, Cl. 562-474.000.
Vella, Sergio. Yarn feeding device. 4,161,297, Cl. 242-47.010.
Vermeers, Stanley L., to United States of America, Navy. Multi-purpose digital measuring apparatus. 4,161,691, Cl. 324-120.000.
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Vitat, Jean-Claude; Remond, Jean-Pierre; and Thebault, Jean-Robert, to Rhone-Poulenc Industries. Drying compositions. 4,161,450, Cl. 252-194.000.
Vollhardt, Hermann: *See—*
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Volvenkov, Gennady V.: *See—*
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Voss, Houston F.: *See—*
Plattner, Jacob J.; Voss, Houston F.; and Magic, Susan E., 4,161,488, Cl. 260-455.00R.

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WABCO Westinghouse: *See*—
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Reinecke, Erich; Ulrich, Helmut; Haas, Arnold; and Kolmitz, Willi, 4,161,341, Cl. 303-52.000.
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Wacker-Chemitronic Gesellschaft fur Elektronik Grundstoffe mbH: *See*—
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Wade, James A.: *See*—
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Wagenknecht, Austin C., deceased (by Wagenknecht, Don A., personal representative); Daravingas, George V.; and Koski, William E., to General Mills, Inc. Plaque inhibiting composition and method. 4,161,517, Cl. 424-48.000.

Wagenknecht, Don A., personal representative: *See*—
Wagenknecht, Austin C., deceased; Daravingas, George V.; and Koski, William E., 4,161,517, Cl. 424-48.000.

Wagman, Gerald H.: *See*—
Weinstein, Marvin J.; Wagman, Gerald H.; and Marquez, Joseph A., 4,161,523, Cl. 424-181.000.

Wagner, Arthur F.; Grier, Nathaniel; and Shen, Tsung-Ying, to Merck & Co., Inc. Poly-[(dialkyl and hydroxy-dialkyl-imino)ethylene halides] and process. 4,161,581, Cl. 525-411.000.

Wagner, Robert J., to Sonoco Products Company. Handling system for flexible shipping containers. 4,161,263, Cl. 222-100.000.

Wakazono, Kenji: *See*—
Ishiguro, Yasuo; Wakazono, Kenji; and Saito, Toshihisa, 4,161,764, Cl. 361-187.000.

Waldo, Tim R. Telephone time recorder. 4,161,626, Cl. 179-7.10R.

Waldron, Wesley K.: *See*—
Castleberry, Donald E.; and Waldron, Wesley K., 4,161,766, Cl. 361-280.000.

Walton, Jimmy W. Stacker for game counters. 4,161,315, Cl. 273-262.000.

Walton, William T., III, to Alcan Aluminum Corporation. Production of aluminum wire. 4,161,416, Cl. 148-12.70A.

Wampler, Gordon D.: *See*—
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Wamsler, Reinhold: *See*—
Franz, Herbert; Wamsler, Reinhold; and Binder, Georg, 4,161,775, Cl. 363-145.000.

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Amann, Bertram, 4,161,627, Cl. 179-15.0BF.

Ward, John K.; and Gardner, Johnny B., to Dow Chemical Company, The. Method for preventing polymers formation in styrene storage containers. 4,161,554, Cl. 427-239.000.

Warner, Peter S.; and Bicht, John R., to Lucas Industries Limited. Vehicle drive systems. 4,161,226, Cl. 180-65.00E.

Warren, Kenneth W.; and Prestridge, Floyd L., to Combustion Engineering, Inc. Apparatus for application of electrostatic fields to mixing and separating fluids. 4,161,439, Cl. 204-306.000.

Warren, William. Making long yolk hard cooked eggs. 4,161,548, Cl. 426-299.000.

Waschke, David C.: *See*—
Martin, Timothy J., Jr.; and Waschke, David C., 4,161,643, Cl. 219-70.000.

Wason, Satish K., to J. M. Huber Corporation. Novel precipitated siliceous products and methods for their use and production. 4,161,455, Cl. 252-174.250.

Wasser, Richard B.; and Sedlak, John A., to American Cyanamid Company. Use of a dissolved cellulose as a dry strength agent and drainage aid for paper. 4,161,423, Cl. 162-163.000.

Wasserman, Rene: *See*—
Fluckiger, Jean L.; and Wasserman, Rene, 4,161,207, Cl. 164-80.000.

Watanabe, Tsutomu: *See*—
Yanagawa, Nobuyuki; Watanabe, Tsutomu; and Tagawa, Kazuaki, 4,161,644, Cl. 219-216.000.

Water Chemists, Inc.: *See*—
Savage, Robert H.; and Young, Cecil G., 4,161,106, Cl. 62-115.000.

Watts, Ridley, Jr. Post assembly and method. 4,161,090, Cl. 52-301.000.

Weaver, Max A.: *See*—
Coates, Clarence A., Jr.; and Weaver, Max A., 4,161,601, Cl. 546-176.000.

Weber, Hans-Werner; and Vollhardt, Hermann, to Siemens Aktiengesellschaft. Radio relay channel branch cascade exhibiting uniform transit-time-and-attenuation-characteristics of all channels. 4,161,694, Cl. 325-1.000.

Weber, Harold J. Concealed structure tracing translator apparatus including position sensitive bitonic indication means. 4,161,686, Cl. 324-3.000.

Wedel, John A.: *See*—
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Wegner, Hans-Georg: *See*—
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Weigele, Manfred; and DeBernardo, Silvano, to Hoffman-La Roche Inc. Process to produce oxazinomycin. 4,161,582, Cl. 536-1.000.

Weinstein, Marvin J.; Wagman, Gerald H.; and Marquez, Joseph A., to Schering Corporation. Rosamicin esters, acid addition salts and methods for production thereof. 4,161,523, Cl. 424-181.000.

Weissel, Oskar, to Bayer Aktiengesellschaft. Cycloaliphatic amines and process for preparing same. 4,161,492, Cl. 260-563.00R.

Wells, Luther R., Jr.: *See*—
Edwards, Donald W.; and Wells, Luther R., Jr., 4,161,142, Cl. 102-23.000.

Wen, Richard Y.; LaFleur, Linda L.; Engel, Michael R.; and Lucas, Anthony J., to Minnesota Mining and Manufacturing Company. Compositions and methods for inhibiting plaque formation. 4,161,518, Cl. 424-52.000.

Wendel, Ion L., to Lowe, James L. Laundry hot water supply coil assembly. 4,161,214, Cl. 165-172.000.

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West, Robert F.: *See*—
Hildebrandt, William J.; and West, Robert F., 4,161,781, Cl. 364-562.000.

Westinghouse Air Brake Company: *See*—
Hart, James E., 4,161,340, Cl. 303-33.000.

Westinghouse Electric Corp.: *See*—
Bolin, Philip C.; Lapen, Robert J.; and Cookson, Alan H., 4,161,621, Cl. 174-14.00R.
Caputo, William R.; and Husson, Alan L., 4,161,235, Cl. 187-29.00R.
Husson, Alan L., 4,161,236, Cl. 187-29.00R.
Johnson, Joseph E.; Ostop, John A.; and Moore, David L., 4,161,746, Cl. 357-73.000.
Longuemare, R. Noel, Jr., 4,161,732, Cl. 343-17.2PC.
Thiel, Peter H., 4,161,712, Cl. 337-159.000.

Wetteland, Maxwell T. Snow ski board apparatus. 4,161,323, Cl. 280-7.120.

Wetter, Jakob, to Sack GmbH. Apparatus for monitoring hydraulic plant for leakages. 4,161,115, Cl. 73-40.50R.

Whittington, Lawrence E.: *See*—
Varnon, James E.; Schievelbein, Vernon H.; Kudchadker, Mohan V.; and Whittington, Lawrence E., 4,161,218, Cl. 166-269.000.

Wichman, William J.: *See*—
Beamer, John D.; and Wichman, William J., 4,161,286, Cl. 239-230.000.

Wilder, Gene R.: *See*—
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Wilfinger, Raymond J.: *See*—
Dubil, James F.; Falcoz, Alain M.; Glaise, Rene J.; Jacquart, Christian A.; Leighton, Howard N.; Riso, Vladimir; and Wilfinger, Raymond J., 4,161,706, Cl. 333-165.000.

Wilkinson, Wilfred H., to Rolls-Royce Limited. Metal cavitated sandwich structures. 4,161,231, Cl. 181-292.000.

Willard, David G.: *See*—
Hopkins, Gregory T.; Dahod, Ashraf M.; Demarines, Victor A.; Meisner, Norman B.; and Willard, David G., 4,161,786, Cl. 364-900.000.

William Cotton Limited: *See*—
Cross, Eric, 4,161,109, Cl. 66-88.000.

Williams, Ian G.: *See*—
Caunt, Anthony D.; and Williams, Ian G., 4,161,461, Cl. 252-429.00B.

Williams, Lawrence: *See*—
Hicks, George E.; Litherland, John W.; Martin, Arlan G.; and Williams, Lawrence, 4,161,160, Cl. 123-1.00A.

Williams, Philip J., to GF Business Equipment, Inc. Tilt chair control mechanism. 4,161,305, Cl. 248-608.000.

Wilson, James C.: *See*—
Lawson, Grover C.; and Wilson, James C., 4,161,422, Cl. 162-135.000.

Wilson, Kenneth E.; and Miller, Thomas W., to Merck & Co., Inc. Method for the separation and purification of antibiotic macrolides. 4,161,583, Cl. 536-17.00A.

Wilson, William G.; and Kay, D. Alan R., to MolyCorp, Inc. Methods of desulphurizing fluid materials. 4,161,400, Cl. 75-58.000.

Windmoller & Holscher: *See*—
Bosse, Frank, 4,161,559, Cl. 428-110.000.

Winslow, John M.; and Maw, Ivan R., to Minnesota Mining and Manufacturing Company. Method for the preparation of a photothermographic system. 4,161,408, Cl. 96-114.100.

Winston, Eric, to Jerrold Electronics Corporation. Programmable modular electronic register and method of implementing same. 4,161,790, Cl. 365-94.000.

Winzeler, James E., to Caterpillar Tractor Co. Winch construction having axially shiftable face gear. 4,161,126, Cl. 74-674.000.

Wirtz, James A. Portable tree seat. 4,161,233, Cl. 182-187.000.

Wisconsin Alumni Research Foundation: *See*—
Arny, Deane C.; and Lindow, Steven E., 4,161,084, Cl. 47-2.000.

Wiseman, Minor R.: *See—*
Bourne, Henry A., Jr.; Ayers, Louis M.; and Wiseman, Minor R., 4,161,215, Cl. 166-65.00M.

Wissbrun, Kurt F.: *See—*
Edelman, Robert; Berardinelli, Frank M.; and Wissbrun, Kurt F., 4,161,579, Cl. 525-444.000.

Wolaver, Dan H., to Bell Telephone Laboratories, Incorporated. Address verification system. 4,161,635, Cl. 179-175.31R.

Wolfson, Ronald I.: *See—*
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Wolk, Roger S.: *See—*
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Wood, Stanley E.: *See—*
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Woodman, Daniel W., Jr.; and Wright, Henry L., to USM Corporation. Machines for board mounting and socket mounting components. 4,161,064, Cl. 29-741.000.

Woodward, Robert B.: *See—*
Heusler, Karl; and Woodward, Robert B., 4,161,476, Cl. 260-306.70C.

Wray, William R., to Polaroid Corporation. Loop forming audio drive. 4,161,758, Cl. 360-90.000.

Wrench, Edwin H., Jr.; and Tiemann, Jerome J., to United States of America, Navy. Charge-coupled multiplying digital-to-analog converter. 4,161,783, Cl. 364-606.000.

Wright, Henry L.: *See—*
Woodman, Daniel W., Jr.; and Wright, Henry L., 4,161,064, Cl. 29-741.000.

Wytruk, Maurice: *See—*
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Herman, John L.; and Stavisky, John, 4,161,357, Cl. 355-3.0DR.
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Masham, Roger D., 4,161,359, Cl. 355-8.000.
Smith, Kenneth W., 4,161,360, Cl. 355-10.000.
Steiner, Edward L., 4,161,277, Cl. 235-304.000.
Turner, Sam R., 4,161,490, Cl. 260-465.00D.

Yamada, Shigeru; and Aoki, Eiichiro, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 4,161,128, Cl. 84-1.260.

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Yanagawa, Nobuyuki; Watanabe, Tsutomu; and Tagawa, Kazuaki, to Ricoh Co., Ltd. Electrophotographic apparatus comprising improved thermal fixing means. 4,161,644, Cl. 219-216.000.

Yankee, Ernest W., to Upjohn Company, The. ω-Aryl-cis-13-PGE compounds. 4,161,605, Cl. 560-53.000.

Yankee, Ernest W., to Upjohn Company, The. ω-Aryl-cis-13-inter-oxa-PGA compounds. 4,161,606, Cl. 560-53.000.

Yarwood, John C.; Yun, Ik Y.; Tyler, Derek E.; and Kindlmann, Peter J., to Olin Corporation. Electromagnetic casting apparatus and process. 4,161,206, Cl. 164-49.000.

Yasui, Seimei; and Oshima, Takao, to Sumitomo Chemical Company, Limited. Process for production of the maleic anhydride adduct of a liquid polymer. 4,161,571, Cl. 526-90.000.

Yee, Albert F.: *See—*
LeGrand, Donald G.; and Yee, Albert F., 4,161,469, Cl. 260-40.00R.

Yim, Ernest W.; and VanLoon, Paul G. G., to Siliconix Corporation. Method of making CMOS structure with retarded electric field for minimum latch-up. 4,161,417, Cl. 148-175.000.

Ying, Charles W., to Atex, Incorporated. Visual output means for a data processing system. 4,161,777, Cl. 364-200.000.

Yokogawa Electric Works, Ltd.: *See—*
Kaieda, Nobuo; Kawakami, Kenji; Okano, Yoshihiro; and Ohtsu, Hiroshi, 4,161,678, Cl. 318-641.000.

Yokozawa, Norio: *See—*
Fujikata, Kenji; Yokozawa, Norio; and Shibayama, Akinori, 4,161,700, Cl. 328-147.000.

Yonezawa, Kazuya; Furukawa, Hisao; and Azuma, Masaaki, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Curable diallyl phthalate compounds and process for producing same. 4,161,572, Cl. 525-100.000.

Yonezawa, Toshio; Ajima, Takashi; and Uchida, Masato, to Tokyo Shibaura Electric Co., Ltd. Semiconductor device with silicon carbide-glass-silicon carbide passivating overcoat. 4,161,743, Cl. 357-54.000.

Yoshida Kogyo Kabushiki Kaisha: *See—*
Tanaka, Taruo, 4,161,246, Cl. 206-45.310.

Yoshikawa, Shinsuke; Hisazumi, Nobuyuki; and Yamamoto, Masataka, to Kureha Kagaku Kogyo Kabushiki Kaisha. Biaxially stretched five-layer film for packaging food. 4,161,562, Cl. 428-215.000.

Young, Cecil G.: *See—*
Savage, Robert H.; and Young, Cecil G., 4,161,106, Cl. 62-115.000.

Young, George H.: *See—*
Pilz, Gilbert B.; and Young, George H., 4,161,329, Cl. 280-474.000.

Youngstown Sheet and Tube Company: *See—*
Jeffers, Robert P., 4,161,273, Cl. 228-154.000.

Yu, Ho Y.: *See—*
Blaske, Theodore A.; and Yu, Ho Y., 4,161,744, Cl. 357-59.000.

Yun, Ik Y.: *See—*
Yarwood, John C.; Yun, Ik Y.; Tyler, Derek E.; and Kindlmann, Peter J., 4,161,206, Cl. 164-49.000.

Zaluska, Philip J.: *See—*
Seymour, John P.; Mascioli, Rocco L.; Beitchman, Burton D.; and Zaluska, Philip J., 4,161,575, Cl. 528-90.000.

Zaman, Mohammad K.: *See—*
Caouette, Kenneth O.; Fortescue, George H.; Zaman, Mohammad K.; and Oda, Donald J., 4,161,650, Cl. 250-199.000.

Zappala, Giuseppe, to Indesit Industria Elettrodomestici Italiana S.p.A. Line output stage. 4,161,675, Cl. 315-371.000.

Zech, Laurel J.: *See—*
Cotic, Dennis J.; Hoffman, David M.; Shelley, Peter S.; and Zech, Laurel J., 4,161,655, Cl. 250-385.000.

Zenith Radio Corporation: *See—*
Gregg, Robert M.; and Miller, Philip C., 4,161,673, Cl. 313-481.000.
Tanaka, Akio, 4,161,699, Cl. 325-464.000.

Zimmerman, Edwin: *See—*
Crestas, Hans; and Zimmerman, Edwin, 4,161,173, Cl. 128-672.000.

Zimmerman Metals, Inc.: *See—*
Elliott, Billy N., 4,161,769, Cl. 362-146.000.

Zitelli, Louis T.; and Beaver, William L., to Varian Associates, Inc. Ultrasonic imaging system. 4,161,121, Cl. 73-626.000.

Zylla, Norbert R. Detachable antenna mount. 4,161,735, Cl. 343-713.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF JULY, 1979

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Creative Ventures, Inc.: *See*—
Moss, David, Re. 30,048, Cl. 340-146.3SY.
Dunlop Limited: *See*—
Lees, Geoffrey; and Williams, Arthur R., Re. 30,047, Cl. 106-288.00B.
E-Z-EM Company, Inc.: *See*—
Greene, Franklin R., Re. 30,045, Cl. 206-455.000.
Greene, Franklin R., to E-Z-EM Company, Inc. Vacuum X-ray envelope. Re. 30,045, Cl. 206-455.000.
Huddle, Carl F., to Tension Structures Company. Vertical arch shelter. Re. 30,044, Cl. 135-4.00R.
Lees, Geoffrey; and Williams, Arthur R., to Dunlop Limited. Road surfacing materials. Re. 30,047, Cl. 106-288.00B.
Moncrieff-Yeates, Alexander J. Vortical flow aerothermodynamic fireplace unit. Re. 30,043, Cl. 126-121.000.
Moss, David, to Creative Ventures, Inc. Character recording system. Re. 30,048, Cl. 340-146.3SY.
Respiratory Care, Inc.: *See*—
van Amerongen, Edward, Re. 30,046, Cl. 239-338.000.
Tension Structures Company: *See*—
Huddle, Carl F., Re. 30,044, Cl. 135-4.00R.
van Amerongen, Edward, to Respiratory Care, Inc. Nebulizer. Re. 30,046, Cl. 239-338.000.
Williams, Arthur R.: *See*—
Lees, Geoffrey; and Williams, Arthur R., Re. 30,047, Cl. 106-288.00B.

LIST OF PLANT PATENTEES

Delbard, Georges A., to Jackson & Perkins Co. Rose plant—Eterna. 4,440, 7-17-79, Cl. 18.000.
Jackson & Perkins Co.: *See*—
Delbard, Georges A., 4,440, Cl. 18.000.
Warriner, William A., 4,437, Cl. 12.000.
Warriner, William A., 4,438, Cl. 15.000.
Warriner, William A., 4,439, Cl. 17.000.
Warriner, William A., to Jackson & Perkins Co. Rose plant. 4,437, 7-17-79, Cl. 12.000.
Warriner, William A., to Jackson & Perkins Co. Rose plant. 4,438, 7-17-79, Cl. 15.000.
Warriner, William A., to Jackson & Perkins Co. Rose plant. 4,439, 7-17-79, Cl. 17.000.

LIST OF DESIGN PATENTEES

Arakaki, James K. Finger ring. 252,384, 7-17-79, Cl. D11-38.000.
Barker, Earl L. Dart game board or the like. 252,412, 7-17-79, Cl. D21-6.000.
Baron, Richard E. Water dam for a flush tank. 252,403, 7-17-79, Cl. D23-69.000.
Basterfield, Ernest P. Combined basin and urinal. 252,404, 7-17-79, Cl. D23-49.000.
BPA Byggproduktion AB: *See*—
Gavel, Margareta; and Gavel, Peter, 252,364, Cl. D6-191.000.
Bustos, Rafael T.: *See*—
Kern, Lawrence G.; Davis, Charles L.; Bustos, Rafael T.; and Taylor, William B., 252,363, Cl. D6-153.000.
Camara, Manuel. Dice game apparatus. 252,414, 7-17-79, Cl. D21-41.000.
Cessna Aircraft Company, The: *See*—
Voisard, Walter B., 252,390, Cl. D12-214.000.
City National Bank & Trust Company, The: *See*—
Graser, Clarence F., 252,410, Cl. D99-28.000.
Coca-Cola Company, The: *See*--
Kern, Lawrence G.; Davis, Charles L.; Bustos, Rafael T.; and Taylor, William B., 252,363, Cl. D6-153.000.
Cohen, Elihu, to Trina, Inc. Mirror. 252,366, 7-17-79, Cl. D6-237.000.
Cohen, Elihu: *See*—
Rose, Arnold; and Cohen, Elihu, 252,409, Cl. D3-39.000.
Cohen, Steve J.; and Hillebrand, Cory W. Support stand for a loudspeaker. 252,359, 7-17-79, Cl. D6-85.000.
Cousins, Michael A.; and Cousins, Morison S. Food dehydrator. 252,397, 7-17-79, Cl. D15-110.000.
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Cousins, Michael A.; and Cousins, Morison S., 252,397, Cl. D15-110.000.
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Dedeken, Eric A. Automobile. 252,389, 7-17-79, Cl. D12-90.000.
Dempewolf, Eugene F. Adjustable and collapsible scaffold. 252,408, 7-17-79, Cl. D25-66.000.
Dobias, John J. Tubing cutter. 252,376, 7-17-79, Cl. D8-60.000.
Dobias, John J. Fence. 252,406, 7-17-79, Cl. D25-38.000.
Dobias, John J. Fence. 252,407, 7-17-79, Cl. D25-38.000.
Dunchock, Richard S., to Optarac Corporation. Eyeglass case display unit. 252,360, 7-17-79, Cl. D6-85.000.
Durham, William S., III. Corner connector for knock-down furniture. 252,365, 7-17-79, Cl. D6-191.000.
Eisenrod, Richard B., to Household Manufacturing Company. Cooking pot. 252,373, 7-17-79, Cl. D7-85.000.
Ellis, Jerry L. Toy vehicle. 252,415, 7-17-79, Cl. D21-76.000.
Fjello-Jensen, Kim. Mobile stand for supporting a table top for office machine. 252,388, 7-17-79, Cl. D12-25.000.
Folli, Arthur C. Measuring-dispensing spoon or the like. 252,368, 7-17-79, Cl. D7-50.000.
Folli, Arthur C. Measuring-dispensing spoon or the like. 252,369, 7-17-79, Cl. D7-50.000.
Folli, Arthur C. Measuring-dispensing spoon or the like. 252,370, 7-17-79, Cl. D7-50.000.
Folli, Arthur C. Measuring-dispensing spoon or the like. 252,371, 7-17-79, Cl. D7-50.000.
Fowler, Norman H., to Ludlow Corporation. Combined bedstead, mattress and storage unit. 252,358, 7-17-79, Cl. D6-80.000.
Freedman, Mark H.; Freedman, Theodore M.; and Weidman, Charles O., to Freedman, Mark H.; and Freedman, Theodore M. Flour sifter or the like. 252,367, 7-17-79, Cl. D7-47.000.
Freedman, Theodore M.: *See*—
Freedman, Mark H.; Freedman, Theodore M.; and Weidman, Charles O., 252,367, Cl. D7-47.000.
Garcia, Secundino. Key holder. 252,356, 7-17-79, Cl. D3-61.000.
Gavel, Margareta; and Gavel, Peter, to BPA Byggproduktion AB. Wall mounted frame for a wardrobe cabinet. 252,364, 7-17-79, Cl. D6-191.000.
Gavel, Peter: *See*—
Gavel, Margareta; and Gavel, Peter, 252,364, Cl. D6-191.000.
Graser, Clarence F., to City National Bank & Trust Company, The. Financial transaction Kiosk. 252,410, 7-17-79, Cl. D99-28.000.
Grimsley, Ernest E. Boring bar housing. 252,398, 7-17-79, Cl. D15-140.000.
Gros, Shirley A. Thread tree. 252,396, 7-17-79, Cl. D15-78.000.
H.I.T. Industries Ltd.: *See*—
Tawil, Abraham I., 252,357, Cl. D3-76.000.
Hartung, Philip F. Bottle. 252,379, 7-17-79, Cl. D9-48.000.
Heine, Friedrich W. Home heater. 252,405, 7-17-79, Cl. D23-97.000.
Heintz, Clifford P. Desk file. 252,401, 7-17-79, Cl. D19-90.000.
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Cohen, Steve J.; and Hillebrand, Cory W., 252,359, Cl. D6-85.000.

Hollendonner, Robert R. Queen chess piece. 252,411, 7-17-79, Cl. D21-52.000.
Honeywell Inc.: *See—*
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Rosenblad, Lars G., 252,400, Cl. D18-24.000.
Hutmacher, Frank C. Floating marker. 252,382, 7-17-79, Cl. D10-107.000.
Jackson, Theodore; and Johnson, Ken. Combined runway locator and wind direction indicator. 252,383, 7-17-79, Cl. D10-109.000.
Johnson, Ken: *See—*
Jackson, Theodore; and Johnson, Ken, 252,383, Cl. D10-109.000.
Kalliroscope Corporation: *See—*
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Kashidaira, Takashi, to Sansui Electric Co., Ltd. Record player. 252,393, 7-17-79, Cl. D14-17.000.
Kern, Lawrence G.; Davis, Charles L.; Bustos, Rafael T.; and Taylor, William B., to Coca-Cola Company, The. Combined display rack and light fixtures therefor. 252,363, 7-17-79, Cl. D6-153.000.
Knight, Jane C.; and Norman, Robert M. Airplane swing seat. 252,413, 7-17-79, Cl. D21-246.000.
Kozuka, Noriaki: *See—*
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Kupperman, Dennis: *See—*
Kupperman, Sam; and Kupperman, Dennis, 252,380, Cl. D9-193.000.
Kupperman, Sam; and Kupperman, Dennis, to RB Toy Development Co. Pantograph package. 252,380, 7-17-79, Cl. D9-193.000.
Kutschmende, Ralph. Illuminated sign with channels for moveable character plates. 252,402, 7-17-79, Cl. D20-10.000.
Lawrence, Gordon H. Name plate or the like. 252,387, 7-17-79, Cl. D11-131.000.
Ludlow Corporation: *See—*
Fowler, Norman H., 252,358, Cl. D6-80.000.
Macaulay, Thomas N. Bottle drainer. 252,372, 7-17-79, Cl. D7-70.000.
Mallory, Robert L.; and Mallory, Sheilah A. Holder for bumper stickers. 252,377, 7-17-79, Cl. D20-43.000.
Mallory, Sheilah A.: *See—*
Mallory, Robert L.; and Mallory, Sheilah A., 252,377, Cl. D20-43.000.
Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 252,375, 7-17-79, Cl. D7-137.000.
Matisse, Paul, to Kalliroscope Corporation. Nutcracker. 252,374, 7-17-79, Cl. D7-98.000.
Mayes, Stephen C.; and von Roth, Frederik G. R., II. Implement back. 252,362, 7-17-79, Cl. D6-136.000.
Meis, William J. Combined hook and supporting frame. 252,378, 7-17-79, Cl. D8-367.000.
Mosier, Thoburn T. Spring pressure gauge or similar article. 252,381, 7-17-79, Cl. D10-83.000.
Norman, Robert M.: *See—*
Knight, Jane C.; and Norman, Robert M., 252,413, Cl. D21-246.000.
Ohya, Toshio; and Kozuka, Noriaki, to Sony Corporation. Video tape recorder. 252,391, 7-17-79, Cl. D14-2.000.
Ohya, Toshio, to Sony Corporation. Television receiver. 252,395, 7-17-79, Cl. D14-80.000.
Onderdonk, Judith A. Adult pacification novelty. 252,386, 7-17-79, Cl. D11-157.000.
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Pape, Siegfried. Holder for an electric shaver. 252,361, 7-17-79, Cl. D6-88.000.
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Rose, Arnold; and Cohen, Elihu, to Trina, Inc. Cosmetic organizer. 252,409, 7-17-79, Cl. D3-39.000.
Rosenblad, Lars G., to Husqvarna AB. Monogram. 252,400, 7-17-79, Cl. D18-24.000.
Sansui Electric Co., Ltd.: *See—*
Kashidaira, Takashi, 252,393, Cl. D14-17.000.
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Tawil, Abraham I., to H.I.T. Industries Ltd. Attache case or similar article. 252,357, 7-17-79, Cl. D3-76.000.
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Voisard, Walter B., to Cessna Aircraft Company, The. Fixed pitch propeller for aircraft. 252,390, 7-17-79, Cl. D12-214.000.
Vong, Hoi T. Record player. 252,392, 7-17-79, Cl. D14-14.000.
von Roth, Frederik G. R., II: *See—*
Mayes, Stephen C.; and von Roth, Frederik G. R., II, 252,362, Cl. D6-136.000.
Waaske, Heinz, to Rollei-Werke Franke & Heidecke. Photographic camera. 252,399, 7-17-79, Cl. D16-05.000.
Weidman, Charles O.: *See—*
Freedman, Mark H.; Freedman, Theodore M.; and Weidman, Charles O., 252,367, Cl. D7-47.000.
Wieselman, Jerome J. Christmas tree ornament. 252,385, 7-17-79, Cl. D11-125.000.

CLASSIFICATION OF PATENTS

ISSUED JULY 17, 1979

NOTE.—First number, class; second number, subclass; third number, patent number

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CLASS 4

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	4,161,730		4,161,472		4,161,112		4,161,704		4,161,332		4,161,436
	4,161,734		4,161,474		4,161,142		4,161,717		4,161,334		4,161,568
	4,161,752		4,161,475		4,161,145		4,161,746		4,161,338		4,161,706
	4,161,753		4,161,550		4,161,158		4,161,790		4,161,343		4,161,780
	4,161,757		4,161,555		4,161,163	44 :	4,161,629		4,161,349	53 :	4,161,068
	4,161,766		4,161,566		4,161,204	45 :	4,161,234		4,161,367		4,161,071
	4,161,785		4,161,570		4,161,244	47 :	4,161,075		4,161,376		4,161,256
37 :	4,161,119		4,161,613		4,161,263		4,161,253		4,161,384		4,161,264
	4,161,514		4,161,617		4,161,340		4,161,309		4,161,427		4,161,331
	4,161,545		4,161,619		4,161,346		4,161,335		4,161,440		4,161,643
	4,161,660		4,161,639		4,161,368		4,161,601		4,161,554	54 :	4,161,596
39 :	4,161,090		4,161,646		4,161,398	48 :	4,161,047		4,161,616	55 :	4,161,084
	4,161,102		4,161,667		4,161,399		4,161,076		4,161,683		4,161,091
	4,161,113		4,161,672		4,161,400		4,161,166		4,161,697		4,161,144
	4,161,129		4,161,719		4,161,409		4,161,170		4,161,726		4,161,195
	4,161,202		4,161,729		4,161,419		4,161,216		4,161,744		4,161,205
	4,161,251		4,161,736		4,161,452		4,161,217		4,161,787		4,161,261
	4,161,267	40 :	4,161,141		4,161,500		4,161,218	49 :	4,161,049		4,161,315
	4,161,271		4,161,215		4,161,521		4,161,219		4,161,395		4,161,375
	4,161,273		4,161,224		4,161,541		4,161,225		4,161,657		4,161,411
	4,161,305		4,161,439		4,161,553		4,161,229	50 :	4,161,345		4,161,443
	4,161,330		4,161,463		4,161,567		4,161,290	51 :	Re.30,043		4,161,444
	4,161,379		4,161,497		4,161,575		4,161,296		4,161,101		4,161,649
	4,161,380		4,161,782		4,161,577		4,161,298		4,161,171		4,161,655
	4,161,396	41 :	4,161,310		4,161,597		4,161,299		4,161,198		4,161,761

DESIGN PATENTS

6 :	252,384	08 :	252,387	20 :	252,408		252,369		252,375		252,410
01 :	252,403	09 :	252,401	25 :	252,374		252,370		252,386	41 :	252,405
04 :	252,372	13 :	252,359	26 :	252,360		252,371		252,397	44 :	252,379
06 :	252,365		252,363		252,415		252,411		252,402		252,409
	252,373	16 :	252,383	29 :	252,385	35 :	252,367				
	252,396	17 :	252,380	31 :	252,382	36 :	252,356	37 :	252,412	47 :	252,358
	252,413		252,394	32 :	252,377		252,357	39 :	252,381	50 :	252,362
	252,414	19 :	252,378	34 :	252,368		252,366		252,390	51 :	252,398

PLANT PATENTS

06 : 4,437	4,438	4,439			

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